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# USSR Report

ENERGY

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23 November 1982

## USSR REPORT

## ENERGY

No. 124

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## COAL

### COAL, POWER MINISTERS RESPOND TO CRITICISM OF KUZBASS DEVELOPMENT

Moscow PRAVDA in Russian 10 Oct 82 p 2

[Article: "'Kuzbass Coal'"]

[Text] That was the title of an article published in PRAVDA on 30 June and 1 July of this year. It raised the problem of developing the fuel base of the Kuznetsk Basin. As was reported to the editorial board by USSR Minister of Coal Industry B. F. Bratchenko, the ministry's governing board examined the problems of the Kuznetsk Basin's work and took steps to correct the revealed shortcomings. The coal extraction plan for the first half of the year was completed by all of the basin's production associations. There is confidence that the annual program will also be completed as a whole.

Fuller provision of new mechanized complexes to the mines has been foreseen. The Scientific Research, Planning and Design Institute of Coal, located near Moscow, is developing a machinery complex capable of mining seams up to 5 meters thick. This year, coal machine building plants have started producing complexes to work thick seams--new combines.

Proposals are being drawn up for developing and expanding the functions of the "Gidrougol'" Production Association. The plans include transforming it into the main association for development of hydraulic coal mining in other production associations located in eastern regions. The mining of coal by this method in the Kuznetsk Basin will increase from 5.6 to 7.4 million tons in the five-year plan.

At the same time the capital investment limits set for the five-year plan will not completely support the required development in the Kuznetsk Basin. Coal mining capacities are being placed into operation late, and coal machine building, the sector's repair base and the production base of the construction organizations are developing too slowly.

In this five-year plan more than 2 million square meters of housing, children's preschool institutions with a capacity of more than 8,000 children and number of cultural and personal service facilities are to be placed into operation in the Kuznetsk Basin. The "Kuzbasszhilstroy" Combine is to place 338,000 square meters of housing space into operation for workers of coal industry and other clients this year. In the first half of the year, it completed 136,400

square meters--130 percent of the amount planned. But the quota for the total volume of construction and installation has been only 85 percent completed.

Measures aimed at improving the material and technical support to house building plants and at eliminating the associated bottlenecks have now been developed and are being implemented. Reconstruction of the Tomusinskiy Woodworking Combine is to be completed in 1983.

The questions raised in the article were additionally examined during further work on the draft state plan for economic and social development of coal industry in 1983.

As was reported to the editorial board by USSR Deputy Minister of Power and Electrification V. A. Lukin, the article properly raised the issue of developing centralized heat supply in Prokopyevsk and Kiselevsk. The "Plan for Supplying Heat to the Cities of Prokopyevsk and Kiselevsk in 1990" drawn up in 1980 by the Siberian department of the VNIPIenergoprom [not further identified] institute foresees construction of a new Prokopyevsk-Kiselevskaya TETs, expansion of the existing boiler plants and construction of new regional boiler plants.

11004

CSO: 1822/28

COAL

#### UKRAINIAN COAL MINISTRY REVIEWS LETTERS FROM MINERS

Kiev PRAVDA UKRAINY in Russian 19 Sep 82 p 2

[Article by PRAVDA UKRAINY Special Correspondent G. Ganul-Polishchuk: "Grounds for Concrete Measures: An Analysis of Work with Letters From Laborers in the Ukrainian SSR Ministry of Coal Industry"]

[Text] Let us begin with an excerpt from my final interview with the republic's deputy minister of coal industry, A. Z. Astrakhan.

Question: What is the Ukrainian SSR Minugleprom [Ministry of Coal Industry] like today?

Answer: It is the headquarters of the republic's coal industry, consisting of 29 administrations, sections and subsections. The ministry has production associations subordinated to it-- 24 in coal extraction, 3 in coal processing and 2 in repair of mining equipment. It also possesses scientific research and planning institutes. The party and government constantly devote enormous attention to our sector, and provide help to it.

Question: Who in the ministry reads letters from the laborers?

Answer: Everyone--from the minister and his deputies down to the letter group of the legal section, the staff of which includes a senior engineer and a complaints engineer. It sounds a little odd, doesn't it--complaints engineer? We call him an engineer because he must deal constantly with the computer center, where all of the information on the mail traffic is processed.

#### Conquering the Coal Seams

When Minister N. K. Grin'ko visited the "Krasnoarmeyskugol'" Association's "Krasnolimanskaya" mine, he was approached by V. I. Ignat'yev, leader of a brigade of stope miners:

"I've been meaning to see you, Nikolay Konstantinovich. We have this problem: To work the seams, which are 2.3 meters thick, we need a new 'LUKP' complex, which I know recently passed its tests successfully in the Kuznetsk Basin."

To be truthful, the minister hears various sorts of questions about new equipment all the time. But V. I. Ignat'yev's proposal was significant to his operation. Therefore a decision was made to hasten manufacture of the new complex in Druzhkovka.

This discussion between the worker and the minister occurred last summer. The complex was ready by the end of the year, and it was shipped to the mine this last January. Even during the tests Ignat'yev's brigade achieved outstanding results. And in August it reached an output of up to 4,500 tons of fuel per day.

Thousands of letters and hundreds of visitors come to the Ukrainian SSR Minugleprom every day. Besides requests of a personal nature, the letters often contain proposals, wishes and recommendations on fuller use of the coal mining reserves.

"Last year one out of every 12 laborers in the republic's coal industry took part in efforts to make production more efficient," said A. F. Ostapenko, chief of the technical administration. "For example during testing of the new '1KM-103' complex for thin seams at the 'Miuskaya' and 'Yasinovskaya' mines, workers and specialists made so many improvements that it became possible, for the first time, to fully mechanize extraction of coal from thin gently sloping and inclined seams without having to cut through wall rock."

Miners are troubled by the cases of idleness that still occur. Workers of Mine No 12 of the "Donetskugol" Association's "Krasnaya Zvezda" Mine Administration once wrote a letter stating that they were not to blame for the fact that the section was always falling behind: "After the mining complex was sent out for repairs and returned we have been able to mine only 170-280 tons per day, as opposed to the planned 340 tons. Much time is spent on repairs. The cost of repairs has already exceeded the cost of the complex itself."

An inspection verified the facts. The enterprise was then given a "KM-87-13" complex that was working well and now things are humming along. At the ministry, meanwhile, the problem was found to be a general one. For example the issue of placing orders for spare parts for mine equipment required by 140 of the republic's enterprises was recently resolved.

Growth in the number of proposals by miners for improving production convinced ministry executives that a special order had to be published: "On Examination of Issues Raised in Letters From Laborers Concerning Improvement of the Work of Different Units of the National Economy." A little while later, the progress at fulfilling the requirements of this order was analyzed, and the positive experience was generalized.

#### The Miner's Life

Consider the settlement beside the Mine imeni Abakumov. More than a settlement, it is something closer to a city! It was not that long ago that the first

inhabitants celebrated their housewarming in three houses built with resources available locally. Now there is a 100-apartment building for young newlyweds. There is an outstanding dormitory. Obtaining loans and construction materials, many miners are erecting their own homes.

Thus no one from this enterprise ever writes letters of complaint. There is a special microclimate here at the Avakumov mine. It is because of these conditions that letters addressed to the ministry and the editorial board contain nothing but statements of sincere gratefulness. Particularly letters from new mine workers.

As an example a young lad once came to work here at the mine after the army. He received space in the dormitory without any waiting at all, and he did not have to pay back the financial moving-in assistance he was given. Extra pay for time served is added to the wages in just a year of underground work. Heating fuel is free. Hot food costs just kopecks. There is a fabulous vacation base on the Sea of Azov. As a material incentive, each year 30-40 persons may purchase a motor vehicle without waiting for their turn on a waiting list. Hero of Socialist Labor V. N. Pikhterev provides a good example: He rides in a "Moskvich" which he received as a prize from the Exhibition of the Achievements of the USSR National Economy.

The ministry's mail bag understandably contains letters of different kinds--both those written by people satisfied with a miner's fate, and those written by people abandoning this land, having been scared away by the difficulties. The task is to encourage more new volunteers to come here: The country needs coal, and there are not enough working hands. This would be a good point to say some kind of words about the unity of action displayed by the Central Committee of the Ukrainian Komsomol and the republic's Ministry of Coal Industry which, by their joint decisions, efficiently organized the travel and reception of young people going to the Donets Basin on Komsomol passes. The ministry generalized the experience of ideological work conducted at the Mine imeni XXVI S"yezd KPSS ("Pavlogradugol'" Association) where, in particular, sponsorship has been set up in exemplary fashion.

Nevertheless the ministry receives more letters of complaint than letters of gratefulness concerning a miner's life. The lion's share of these complaints concern the administration for communal housing and personal services. The causes behind the complaints were analyzed. The main one is that the plans for overhaul of residential buildings were not being fulfilled. Each year the production associations failed quotas they themselves had set. No one was essentially held responsible. Now the ministry publishes an expanded order containing quotas to be satisfied in the five-year plan by the communal housing service of each mine. Moreover the letter indicates firm deadlines, for which executives are held no less responsible than for coal extraction quotas. Here are the first results: Last year, while overhaul of 712,000 square meters of living space was planned, 718,000 square meters were finished, and in the first half of the present year 287,100 square meters were overhauled, as opposed to the 275,000 square meters planned.

Mention should be made of the fact that each year the governing board of the Ukrainian SSR Minugleprom makes decisions jointly with the oblast executive

committees on making improvements on miner's cities and settlements. Such joint decisions have been made, for example, with Donetsk and Voroshilovgrad oblast executive committees. Concrete measures are being drawn up, indicating what jobs are to be done when, where and by whom, be it asphaltting the sidewalks, working on electric lighting, installing gas supply lines or creating children's playgrounds. Owing to such joint efforts the amount of energy being contributed has doubled, and control over fulfillment of adopted decisions is clearer.

#### Computers Help

One of the ministry employees admitted: "I wince every time someone places a tape from the computer center on my desk with a reminder of the deadlines for reviewing letters."

Such tapes are being continually delivered to all administrations as well as to the letter group of the legal department, where the data are analyzed and information is compiled as a guideline for action. Each quarter the computer center provides an accurate picture of the trends in the mails. And what is very important is that the computer is able to reveal where things have gotten better and where things have gotten worse. The ministry employees pore over the data and hasten to make the correct conclusions, so that action could be taken from knowledgeable grounds.

For example last year there was a noticeable increase in the number of letters connected with raising and improving the wages of coal industry workers, as foreseen in a decree published by the CPSU Central Committee and the USSR Council of Ministers. This mail contained many statements of thanks to the party and government for their concern for the miners. N. Kholostykh, a well known miner employed by the Mine imeni Dzerzhinskiy who completed his quota for the 11th Five-Year Plan back in June, reported in a telegram to the ministry that he had reviewed his pledges and decided to complete another annual quota by the 60th anniversary of the USSR. Because of the numerous inquiries made concerning the new wages, the ministry organized around-the-clock shifts for specialists on state standards at every mine, and it created consultation offices. Office hours are now held for laborers locally, at remote miners' settlements, and open letter days are held.

The computer also revealed that many complaints were being submitted to the ministry by way of higher organizations. What was wrong?

Here is a case history. Two years ago N. Ponomarchuk, a veteran of the Great Patriotic War, asked the chief of the production-technical communications center Ya. Ruban ("Aleksandriyaugol'" Association) to install a telephone. But the latter refused "because it was impossible." However, seeing that telephones had been installed at the places of work of his neighbors in the course of the 2 years, Comrade Ponomarchuk wrote a higher authority, requesting that his situation be straightened out. Of course, steps were taken and the chief of the communications center was punished.

Such cases only confirm that if every petition of the laborers is examined locally with due attention and justice, people would not appeal to other

organizations. However, there are also times when requests are made inopportunistically: At such times the individual should be promptly notified as to the reason for postponement or rejection.

What else does the computer tell us? Many of the letters are written about mismanagement and abuses. The ministry analyzes these letters and takes the proper steps. But here is what happens when individual cases are not properly handled.

At the end of last year the newspaper TRUD sent a warning to the ministry in behalf of the workers that V. Shkuratov, a shift chief at the "Proletarskaya" Central Concentrate Factory of the "Donetskugleobogashcheniye" Association, was using publicly owned materials to build a garage for himself. The ministry made inquiries in the association. General director V. Kochetov replied: "Enclosed is a memo on our inspection of the facts...." Besides the memo from the inspectors and the extremely naive explanation given by V. Shkuratov himself, no conclusions were made from this incident. Thus we find that a complaint is confirmed but everything remains as before.

In a word, the computer provides the coaching, the information is discussed at meetings of the governing board, orders are published, and semiannual reports providing a detailed, illustrated analysis of the mail are submitted to subordinated associations for action. What happens next? Analysis of individual documents has shown that no constant control over whether or not measures are being implemented by the associations is being exercised.

Of course different associations display different attitudes toward cases of red tape and formalism in work with letters from laborers. For example last year 26 workers were disciplined and 2 were dismissed from their positions in "Donetskugol'." Last year the association published several strict orders regarding the associated infractions.

Meanwhile other associations such as "Donbassantratsit" and "Antratsitugleobogashcheniye" do not feel that a superficial approach to examining requests from laborers is an infraction of any kind. In any case the replies they send to the ministry have nothing to back them up.

There are also some shortcomings in the approach taken to letters within the ministry administration itself. Having listened to reports on the work done with petitions from the laborers, the party committee did the right thing by holding these executives personally responsible for executive discipline. After all, the quantity of repeat letters could hardly be said to be decreasing. Administrative employees are still not doing enough to check up on complaints locally.

As we are required to do so by the CPSU Central Committee decree "On Measures for Further Improvement of Work With Letters and Proposals From Laborers in Light of Decisions of the 26th CPSU Congress," we must continue to deeply study the content of letters and make competent use of the obtained information in our practical work.

Here is one observation that can serve as an example: The quantity of petitions sent by laborers to the ministry almost doubled in one of the recently



created associations. What were the laborers writing about? What is troubling them? And what steps can be taken right now?

Thought is being given to these questions in the ministry. And the miners will receive complete replies and help locally. And this will increase their strength tenfold. And the work will be more pleasant. The hard labor of people mining coal is so greatly needed by the country.

11004

CSO: 1822/29

## COAL

### LOCAL CONTROL OF MINE EXPANSION SOUGHT

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Sep 82 p 2

[Article by special correspondent V. Bobrov: "Who is to Deepen the Mine?"]

[Text] In January 1981 the total output capacity of enterprises belonging to the All-Union "Kuzbassugol'" Industrial Association was 103.5 million tons. A year passed, and the miners estimated with alarm that their output capacity had dropped to 102.7 million tons. One of the main reasons was a delay in preparing the explored coal reserves for mining.

For the Kuznetsk Basin, which has enjoyed a rather high rate of increase in the volume of underground extraction over a period of many years, this trend is not normal. It is a consequence of a serious mistake in the upper levels of administration.

It was once believed that the "Kuzbassshakhtostroy" Combine would assume the responsibility of all construction at coal enterprises. But it is one thing to build a new mine, to dig a shaft and to erect an administrative-personal service combine, since the capital investments are sizable and there is room in which to work. But it is a totally different thing to build all of the various additions and other facilities of similar scale.

Many thousands of them are accumulating in the basin, and the production organism cannot develop normally without them. Like it or not, all of these "small" facilities have to be built.

Experience has shown that mine builders are not in a position to do all of these jobs. This is why the mine association has started creating mine building trusts, capital construction departments and major mining operation sections.

Because "Kuzbassshakhtostroy" dispersed its efforts over many hundreds of facilities, the already unsatisfactory pace of reconstruction dropped even more. Of the 68 mines and mine administrations belonging to the All-Union "Kuzbassugol'" Industrial Association, 29 are being rebuilt. This includes 17 that have been under reconstruction for more than 10 years. The "Abashevskaya" mine holds a unique sort of "record," having been under construction for 22 years. And what is most saddening is that when the reconstruction is finally completed, there will no longer be anything left to mine.

We cannot but agree with the opinion ventured by Hero of Socialist Labor V. Yerpylev, a USSR State Prize laureate, director of "Nagornaya" mine and a well-known specialist:

"There is no objective way," Viktor Mikhaylovich believes, "to determine who is to do the rebuilding and when. Today much depends on who shouts louder than everyone else...."

On one hand many tens of millions of rubles are spent on totally unpromising reconstruction in the basin. On the other hand 31 mines do not have any coal reserves of the operating horizons, and instead they are either working the reserves of neighboring mines or mining sloping seams on a temporary basis. The All-Union "Kuzbassugol'" Production Association mines almost half of its coal from sloped seams, while the "Leninskugol'" Production Association mines 84.7 percent from such seams. What this can lead to is described by G. Kassikhin, the deputy chief for construction at the all-union production association:

"Reserves mined from horizons undergoing reconstruction are treated as part of the old output capacity. And therefore when reconstruction is finished, we do not enjoy the expected growth in output. Thus we begin a process of writing off output capacities that do not exist."

At the same time examples of a different sort can also be found in the basin. G. Kharitonov, director of the Mine imeni 7 Noyabrya (presently general director of the "Leninskugol'" Association) organized reconstruction on his own, deepening the shaft with his own resources. In this case the reserves were increased by tens of millions of tons. The stable operation of the "Alardinskaya" and the imeni V. I. Lenin mines and of the "Fizkul'turnik" Mine Administration is also based on the self-help method of supporting the output capacities of the enterprises. Local resources are being used to further construction at the "Kol'chuginskaya," "Oktyabr'skaya," "Polysayevskaya," "Kuznetskaya" and "Pionerka" mines. But this is often done not entirely legally. This is why whenever the discussion turn to the sources of financing, the people I interviewed often tried to shift the discussion to another topic.

But all of them--mine directors and association general directors--were unanimous in the opinion that the work of maintaining the output capacities should be placed under the responsibility of the miners themselves. Almost all of them cited the experience of those coal enterprises in the Kuznetsk Basin where the executives used their own initiative to rebuild their enterprises, at their own risk, and managed not only to maintain but even increase their output capacities.

Moreover it is hardly ever possible to achieve the end goal when reconstruction is done by contracting organizations. There are sufficient examples of this. According to the plan, "Sudzhenskaya" mine was supposed to increase its mining capacity to 1.8 million tons at a productivity of 75.5 tons per worker per month following reconstruction. The capital investments were even greater than foreseen by the estimate. But the indicators turned out to be more than a third worse than foreseen.

The question begs itself: What sense is there in reconstruction costing many millions but resulting in a decline in extraction level and labor productivity? How can we talk about the effectiveness of capital investments when the money is spent without any sort of return?

As the time of reconstruction increases, its cost necessarily grows, and very considerably at that. The planning concepts go obsolete. That which was believed to be progressive 10-15 years ago often ends up obsolete by the time it is implemented. Today the mine builders do not have a practical interest in the end result--a completed facility built at a modern level. Once they are unable to complete their work within the standard time, they lose their bonus for early completion. And once this is so, what difference is it to them whether it takes them 5 or 10 more years to finish the work? As the situation is now, the contracting organizations get the most profit from projects involving large capital investments. This is why they make no attempt to reduce the cost of construction.

Incidentally, miners usually refer to the operations associated with preparing new reserves for mining not as reconstruction but as "deepening." This term reflects the nature of the work done much more precisely. As the coal reserves of a prepared horizon are mined out, preparations must be started to work lower beds--that is, the mine has to be dug deeper. At such times a mine may also often be given the task of increasing its output capacity by improving its procedures and introducing more-productive equipment. The point of view of specialists who believe that "deepening," even if it means an increase in output capacity, should be treated as part of the production process performed by the miners themselves deserves attention. This concept is advantageous primarily because it completely eliminates the conflicts that unavoidably arise in the mutual relationships between contractor and client.

Many experienced administrators believe that this would make it possible to surmount, in minimum time with minimum outlays, the decreasing trend of underground coal mining volume in the Kuznetsk Basin. After all, mines do provide the bulk of the coking coal. We must hasten preparation of new reserves to replace those that are paying out. The USSR Ministry of Coal Industry must obviously make an attentive analysis of the experience that has been already accumulated by enterprises of the All-Union "Kuzbassugol'" Production Association so that it might make an effective decision on this issue.

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CSO: 1822/28

COAL

SREDAZUGOL' ASSOCIATION REPORTS PROGRESS

Frunze SOVETSKAYA KIRGIZIYA in Russian 18 Sep 82 p 3

[Article by Kirghiz Press Agency Correspondent N. Pletnev: "Miners' Horizons"]

[Excerpts] "Coal extraction from the open pit will constantly grow," said Yu. P. Tolmachev, chief process engineer of the "Sredazugol'" Production Association, to this Kirghiz Press Agency correspondent. "A self-contained drilling rig and a powerful bulldozer intended for work on the terraces have just arrived. We are awaiting an EShA-10/70 walking excavator and several 70-ton BelAZ trucks."

But of course the main hopes are being laid on reconstruction of the "Almalyk" open-pit mine. It will be responsible for increasing local coal extraction by almost a third. And the reserves of this coal are great--there is enough coal for 40 years of work. Renovation of the enterprise will begin at the end of the present five-year plan. Specialists that will be preparing the reconstruction plan have already arrived at Osh.

The year of the 60th anniversary of the USSR's formation has become especially productive for "Almalyk" miners. Having assimilated the new equipment, they managed to significantly accelerate the progress of stripping operations and raised labor productivity by 2.5 percent in the course of their shock watch. In 8 months they shipped four 1,000-ton railroad trains of fuel in excess of their quota. The count of tons in excess of the plan continues to grow.

11004

CSO: 1822/29

COAL

#### PROBLEMS WITH GAS PRESSURES EXAMINED

Kiev PRAVDA UKRAINY in Russian 19 Sep 82 p 2

[Article by Candidate of Technical Sciences I. Grigor'yev, general director, "Voroshilovgradugol'" Production Association, Lenin Prize laureate: "Surmounting Ground Pressure"]

[Text] As the depth of coal mining increases, miners encounter difficulties having an influence not only fulfillment of the job but also on the working conditions. The preparatory mining operations must be performed in gas-saturated, stressed rock.

Ground pressure increases with depth, and weak rock cannot hold up to drift tunneling. This is why drifts are tunneled in strong rock that is most resistant to ground pressure--sandstone. But even this rock has its weakness. It is saturated with gas, it is under high ground pressure and it is capable of breaking down instantaneously. As an example more than 20 million rubles were spent to correct the consequences of ground pressure in sandstone during construction of the Mine imeni A. Skochinskiy. Work safety worsens dramatically.

Colleagues of the Makeyevka Scientific Research Institute, the Ukrainian SSR Academy of Sciences Institute of Geotechnical Mechanics, the VNIIMI [not further identified] and the Ukrainian Ministry of Coal Industry worked for more than 20 years on the problem of digging drifts at large depths in stressed, gas-saturated rock. We can say that their difficult labor has been graced with success.

The nature and mechanism of ground pressure as it manifests itself in relation to drift tunneling under these conditions were studied, the theoretical fundamentals were created, and miners received the possibility of predicting the condition and behavior of rock when tunneling drifts. The method for predicting the condition of rock on the basis of information obtained by geological exploration makes it possible to sensibly locate drifts in the most stable rock--both in the planning stage and during construction and reconstruction of mines, and to foresee creation of safe working conditions. For example consideration of such a prediction during construction of the Mine imeni Stakhanov and during reconstruction of the Mine imeni XXV S"yezd KPSS made it possible to get coal mining operations operating promptly, to reduce construction costs and to raise the safety of the mining operations. Drifts are now

being tunneled successfully by safe and productive processes--ones not requiring blasting (combines are used) and ones involving preliminary relief of rock stresses.

The brigade led by Hero of Socialist Labor V. D. Tikhorskiy at the Mine imeni XXV S"yezd KPSS, which uses a method not requiring blasting, tunnels 100-120 meters of drifts per month, as compared to 20-30 meters with the drilling and blasting method. And the Mine imeni Pochenkov, which uses a method entailing preliminary relief of stresses in gas-saturated rock, has tunneled more than 6,000 meters of drifts to a depth of 800-900 meters in the time of its operation. This made it possible to significantly increase the stability of the drifts, to raise the tunneling rate and to reduce outlays on drift maintenance.

I believe that the book "Creation of the Theoretical Principles and Development and Introduction of a Complex of Effective Methods of Predicting the Condition of Stressed, Gas-Saturated Rock in Deep Shafts and Tunneling Drifts in Such Rock" has been duly nominated for the Ukrainian SSR State Prize in science and technology.

11004

CSO: 1822/29

## COAL

### BRIQUETTING PROCESS YIELDS CHEAP HEATING FUEL

Minsk SOVETSKAYA BELORUSSIYA in Russian 23 Sep 82 p 2

[Article by Candidate of Technical Sciences Ya. Opman: "Dust has Become Fuel"]

[Text] About 2 million furnaces and boilers have been installed to heat the republic's residential buildings and communal and personal service institutions. They burn an enormous quantity of fuel, mainly peat briquettes, which are characterized by a relatively high heat of combustion, low ash content and convenient use.

The most complex and expensive process in the production of such briquettes is thermal artificial drying of cut peat before pressing. The situation has been aggravated by the fact that we have been using imported drying units for many years.

This makes the success of specialists at the "BelNIItopproyekt" [not further identified] institute, who developed a pneumatic gas-operated high-productivity dryer, all the more significant. For the first time in Soviet and foreign practice, this dryer is outfitted with simply designed devices which intensify the drying process. Such dryers are now being used by four of the republic's peat briquetting plants.

There is another development of the collective of the "BelNIItopproyekt" institute of great value. As we know, coal imported for communal and personal service enterprises contains a large quantity of so-called fines, use of which in small boilers and individual furnaces is difficult and ineffective.

Moreover a significant part of the coal fines are lost irretrievably at the warehouses. So that this would not occur, sintering (briquetting) of the coal dust and fines had to be organized. But scarce and expensive substances are required by the coal briquetting process.

Searching for a solution to the problem, the institute's scientists demonstrated that peat could play the role of the binder. The experimental research proceeded successfully. And here are the results: When 30 percent coal is added to peat, the heat of combustion of the briquettes increases by 15 percent. Moreover owing to the greater density of the peat-coal mixture in comparison with peat, the productivity of the briquette presses rises by a factor of 1.3-1.5.



The procedure for making peat-coal briquettes does not require significant changes in the plant equipment. Now this new procedure for making briquettes out of cut peat mixed with coal is being introduced at the "Berezinskiy" Plant, Minsk Oblast.

Here is another of the institute's interesting projects. A significant quantity of fuel dust forms when dried peat is briquetted. It is trapped to some extent and returned to the briquetting process. But the finest particles--up to 1,000 tons of dry peat per year--are carried away into the atmosphere. The collective of the "BelNIItopproyekt" has developed a system for burning such a dust-air mixture in an industrial furnace that generates heat to dry peat. This completely eliminates the discharge of dust into the atmosphere and simultaneously saves 10 to 20 percent of the fuel. This dust utilization system has been introduced at a number of the republic's peat briquetting plants.

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CSO: 1822/28

## COAL

### NERYUNGRI MINING COMPLEX GROWING

Moscow PRAVDA in Russian 7 Sep 82 p 1

[Article by correspondent V. Yermolayev: "The Neryungri Giant"]

[Text] Miners and builders of the "Neryungrinskiy" open-pit mine received a new lot of rock excavators with a shovel capacity of 20 cubic meters. Of equal power to the mighty excavators are 180-ton dump trucks, working side by side with them in the quarry. This powerful equipment is helping miners of the Yakut SSR to increase the rate of coal extraction.

The planned productivity of the first generation of the open-pit mine, which was placed into operation in the year before last, has now been surpassed by a time and a half. The time has now come to begin developing the second generation, which is expected to have the same output--2.5 million tons of coal per year. In the next 2 years there are plans to introduce a third and a fourth generation of the open-pit mine, each with a productivity of 4 million tons of fuel.

"Construction of an open-pit coal mine, a concentration factory and the first generation of a GRES is to be completed in this five-year plan," said P. Fedorov, secretary of the Neryungri gorkom. "We are happy with the fact that out of all of the mineral deposits that have been discovered along the Baykal-Amur Rail Trunkline, they decided to begin mining our coal first. After the open-pit mine is in full operation coal extraction will achieve 15 million tons, and the stripping volume will attain 100 million cubic meters of rock per year. The concentration factory presently under construction will process 9 million tons of coking coal per year."

About 25,000 builders are erecting these powerful modern enterprises in the southern Yakut SSR. The city of Neryungri and the settlements of Serebryanyy Bor, Berkakit, Zolotinka, Nagornyy and Torgo are growing swiftly. A steel branch extending from the trans-Siberian station of the Baykal-Amur Rail Trunkline to Ugol'noy Station--a distance of more than 400 kilometers--has noticeably improved the Yakut ASSR's transportation link with the country's economic centers. Trains carrying machines, mechanisms, materials and various structures are now traveling directly to the construction sites. And they are now returning more and more frequently filled with fuel.

A concentration factory loading spur, a radio relay line and a 220 volt power transmission line extending from Tynda to Neryungri and connecting the autonomous republic with the Far Eastern Power System have also been placed into operation in the Yuzhno-Yakutskiy Territorial-Production Complex. The output capacity of the Chul'manskaya GRES has risen noticeably. Now that a large-panel house building plant has been placed into operation, the rate of erection of housing and of cultural and personal service facilities has risen.

Competing for an honorable welcome to the 60th anniversary of the USSR's formation, many of the creators of the territorial-production complex are significantly surpassing their shift quotas. Excavator brigade leader K. Bekeshev is in the ranks of the leaders. Machine operators in his crew--R. Aver and V. Krauze--are doing excellent work with their complex equipment. The veterans generously share their rich experience with the young workers.

"Recently our collective organized a single complex together with the crew of the adjacent excavator headed by F. Zoloto," said K. Bekeshev. "The rock is carried out by eight 180-ton trucks assigned to us. We also have our own bulldozer, which we use to keep the motor road in good condition."

The advantages of the new organization of labor are obvious. For example if one of the excavators must stop work for some reason, the other can start operating at a higher pace. As a result idleness of dump trucks can be decreased and the volume of bulldozer operations can be increased. Within a month the crews of two excavators moved 110,000 cubic meters of rock more than planned to the dumps. K. Bekeshev's crew processes up to 15,000 cubic meters of stripped rock in a single shift. The annual productivity of the machine can be increased. The machine operators say that it would be suitable to include drill operators into the composition of the complex as well. This would help improve the work of all builders and miners at the open-pit mine.

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## COAL

### BRIEFS

NEW TUNNELING COMBINE--Yasinovataya, Donetsk Oblast--the tunneling combines which the Yasinovataya Machine Building Plant has begun producing will hasten construction of coal mines. Tests on an experimental model of the machine conducted at one of the mines of the Donetsk Basin demonstrated its high operating qualities. The greater available power per unit and the special strength of the combine's structure permit it to tunnel a distance of up to 200 meters per month through hard rock. This underground "racer" has one other advantage: Its telescopic working organs make it possible to dig a tunnel with a cross section of up to 35 square meters. Such a spacious "corridor" will be needed in ultradeep mines, in which the drifts will have to be well ventilated owing to the high temperatures. A single machine operator can control the combine, which performs all operations in automatic mode--from breaking down the rock to conveying it out of the stope. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Oct 82 p 2] 11004

COAL MINING RECORD--Ekibastuz-- iners of the "Ekibastuzugol'" Production Association shipped hundreds of thousands of tons more fuel than planned to power engineers. The largest contribution to this accomplishment was made by crews operating ERShRD-5000 rotary excavators. In the first year of the five-year plan the brigades led by R. Fetser and A. Shishlov, which are using the Novokramator-built machines that extract up to 5,000 tons of coal per hour, promised to raise their annual productivity to an unprecedented figure by the end of the five-year plan--10 million tons. A nationwide record has already been achieved in the rivalry between the masters. Shishlov's brigade extracted 8,172,000 tons of fuel from its stope during the year. This year R. Fetser and his comrades are closer to the 10 million mark. This expert engineer, who helped to integrate the very first rotary excavator in Ekibastuz into the production process, has nurtured a friendly and highly skilled crew. Machine operators A. Shmeyer and A. Demin and assistant machine operator S. Grefenshteyn have become true masters in their work. [by Yu. Razgulyayev] [Text] [Moscow PRAVDA in Russian 23 Sep 82 p 2] 11004

MINE FIRE EXTINGUISHER--Fire in a coal mine is the most dangerous disaster. And the threat of fire comes not only from flames: The methane-air mixture contained in mines is capable of exploding at any moment. To control fire and prevent explosions, specialists of the All-Union Scientific Research Institute of Mine Rescue have developed an inert gas generator equipped with a turbojet engine. When kerosene is burned in the engine and the combustion

products are subsequently cooled with water, an inert mixture of steam and gas forms. If foam is required, the mixture of steam and gas is fed through a foam generator contained within the gas generator outfit. Such a generator can be assembled in a mine in 30-40 minutes. [Text] [Moscow SOVETSKIY VOIN in Russian No 17, 1982 p 30] 11004

EXTRA COAL MINED--Kirovograd Oblast--This year the collective of the "Aleksandriyugol'" Production Association's Balakhovskiy open-pit mine extracted about 50,000 tons more of fuel than planned. This accomplishment was achieved owing to highly effective use of mining equipment and the efficient, well coordinated work of the excavator crews. The best results were achieved in the shock watch in honor of the 60th anniversary of the USSR's formation by machine operators I. Kravchenko and G. Perchik. Their crews have already mined 18,000 tons of coal over their quota. [by I. Bratchenko] [Text] [Kiev PRAVDA UKRAINY in Russian 4 Sep 82 p 2] 11004

HEAT FROM BY-PRODUCT METHANE--Vorkuta--Use of boilers run by methane contained in mines has helped to increase the amount of coal delivered to the country's center by Arctic miners. This gas, which had been discarded in former times, now heats the drying units of the concentration factory belonging to the "Severnaya" mine. This will permit the enterprise to save 15,000 tons of coking coal annually. The "Vorkutaugol'" Association has created a special subdivision to rebuild the boiler and dryer units. The local "PechorNIIProyekt" institute is doing the planning, and all other work is being done on a self-help basis. Use of mine methane in boiler burners has not only produced an annual savings of hundreds of thousands of rubles but also raised production quality, lengthened the life of the equipment and precluded environmental pollution. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Sep 82 p 2] 11004

MINING QUOTA SURPASSED--Krasnoyarsk Kray--More than a quarter million tons of valuable fuel were mined in excess of the plan by miners of the "Borodinskiy" open-pit mine, which is operating as part of the future KATEK [not further identified]. The rotary excavator crew headed by senior machine operator V. Avtushko achieved the greatest successes in the competition in honor of the 60th anniversary of the USSR's formation. It promised to complete its annual quota by the Great October holiday. The coal mining masters are already credited with 3 million tons of fuel extracted since the beginning of the year. [Text] [Moscow IZVESTIYA in Russian 30 Sep 82 p 1] 11004

TWO-YEAR MINING QUOTA--Pavlograd--Miners of the Mine imeni XXVI S"yezd KPSS of the "Pavlogradugol'" Association reported fulfillment of the plan for 2 years, having delivered 200,000 tons of coal in excess of the plan since the beginning of the year. Working in complex mining and geological conditions, the miners reached the 1,000-ton mark in their daily production rate at their stope during the socialist competition in honor of the 60th anniversary of the USSR's formation. [by L. Teushchakov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 26 Sep 82 p 1] 11004

COAL TRAINS--Amur Oblast--Each day diesel locomotive crews from the Tyndinskiy Locomotive Depot carry Yakut coal from the Neryungri open-pit mine on the lesser Baykal-Amur Rail Trunkline. In one of the last days of August they

carried their five-millionth ton of fuel since industrial extraction began. The rate of coal shipment continues to grow with every month. The target for the last year of the current five-year plan is to mine and deliver 13 million tons of the "black gold" to consumers. [by M. Timchenko] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 3 Sep 82 p 1] 11004

HALF-MILLION TONS OF COAL--Vorkuta--A brigade led by Hero of Socialist Labor Yu. Bronnikov has now brought up half a million tons of fuel since the beginning of the year at the "Vorkutaugol'" Association's "Severnaya" mine. It has become the sixth collective in the association that has surpassed this high coal mining mark. In all, more than 10 mining brigades have promised to extract 500,000 tons or more fuel by the 60th anniversary of the USSR's formation. [by V. Krukovskiy] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Sep 82 p 1] 11004

"YUBILEYNAYA" MINE RECORD--Nobokuznetsk--Miners of Yu. Ignatov's brigade of the "Gidrougol'" Production Association's "Yubeleynaya" mine has brought up its half-millionth ton of coal since the beginning of the year. This is exactly how much coal this leading brigade of hydraulic miners planned to extract by the 60th anniversary of the USSR's formation. It fulfilled its pledges almost 4 months ahead of schedule. It was successful owing to an increase in labor productivity. Every day Ignatov's brigade produces almost 300 tons of coal in excess of the daily quota. This is a mining record among miners of fully mechanized brigades in Novokuznetsk. [by A. Tenditnyy] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Sep 82 p 1] 11004

MINE CABLE CARS--Cableways designed by specialists of the "Uglemekhanizatsiya" Scientific-Production Association can deliver cargo to drifts inaccessible to conventional mine electric locomotives. The association's experimental plant in Voroshilovgrad has begun manufacturing them. Such a transporter is capable of handling steep ascents and descents. Carts carrying materials and equipment are delivered right to the drifts by means of a special winch. Such a cableway operates dependably, it is practically noiseless, and most importantly it frees the miners of heavy manual labor. [Text] [Moscow PRAVDA in Russian 24 Sep 82 p 2] 11004

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CSO: 1822/28

## PIPELINE CONSTRUCTION

### CONSTRUCTION DEPUTY MINISTER INTERVIEWED ON GAS PIPELINE PROGRESS

Moscow SOVETSKAYA ROSSIYA in Russian 5 Oct 82 p 1

[Interview with USSR Deputy Minister of Construction of Petroleum and Gas Industry Enterprises A. Vesel'yev; date and place of interview not given: "On With the Pipeline!"]

[Text] The first 1,000 kilometers of piping have now been welded into a single thread at the construction site of the new Urengoy-Pomary-Uzhgorod Gas Transport System. Having determined the planning deadlines, builders and installers of subdivisions of the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises completed a fourth of the welding jobs on this unique gas pipeline. How was this labor victory achieved? The editorial board asked Deputy Minister A. Vesel'yev to answer this question.

A break with the traditional forms of management, the imperfections of which were revealed as the technical output capacity of our subdivisions increased, was the foundation of success. It would be sufficient to point out that just in the last 2 years the power available per worker increased by a factor of two in the work areas. It became difficult to manage the complex operation, in which many sectors were represented. Moreover each collective was responsible only for its immediate task, and was essentially indifferent to what its neighbor was doing. It was this isolation that we tried to surmount by creating the new administrative structure. Now the welding, preparatory, insulating and many other jobs have been brought together into a single production flow. Everyone is now concerned for just a single result, the final one--completion of the pipeline. And as a consequence labor productivity increased dramatically. While in former times laying 15 kilometers of piping in a month was thought to be an accomplishment, today we have become accustomed to much greater results. For example in September the "Novosibirsktruboprovodstroy" Trust reported completion of 25 kilometers by its production units. But even this, we found out, was not the limit: The production units of the "Mosgazprovodstroy" Trust laid 32 kilometers in that same month.

It stands to reason that the new administrative system would not have produced the desired result, had the organizational changes not been accompanied by an energetic search for new forms of socialist competition. As an example we have

developed the following order: Every Monday the results of work on pledges and the weekly and daily assignments are summarized simultaneously along the entire route. This efficient method not only helps us to reveal the winners and the laggards and not only to immediately encourage them morally and materially, but also to reveal--this is especially important--the "bottlenecks," to take immediate steps to eliminate them. Here is a fresh example. On one of the last Monday meetings V. Belyayeva, chief of a production unit of a welding and installation trust, reported with alarm that failure of the socialist pledges was threatened by a shortage of pipe. It found out that the work pace in her area was so great that the planned quantity of piping was simply not enough. We got together with the railroaders to aid the collective, and literally in just 3 days we brought in the additional quantity of pipe.

The brigade contract, which is related to the Shchekino method, is the basis for organizing labor in our work areas. For example not that long ago the production units of the "Kuybyshevtruboprovodstroy" Trust employed more than 400 persons. Now there are 260. This is even though the work has not decreased at all--it has even increased. Everyone has started to work more effectively. Besides everything else, the stimuli are helping this along: To raise the interest of the workers in the end result, we introduced wages based on a common contract into the integrated production units.

Now a few words about the future. As the readers are already aware, the main construction and installation operations are now going on in the section from the Ural to the western border. The Siberian trusts will also begin their operations of laying the gas pipeline when winter begins. Their area extends from Urengoy to the Ural. They are to lay more than 1,000 kilometers of piping there in a short period of time. I would like to stress that completion of this task will depend not only on them but also on the haulers. Railroaders, seamen and rivermen must deliver the planned quantity of piping, production equipment, fuel and structures to that area. We are counting very much on their help.

The sector's labor collectives are confident that the socialist pledges adopted in honor of the USSR's 60th anniversary will be satisfied. The builders are fully resolved to lay not less than 2,000 kilometers of piping this year.

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## PIPELINE CONSTRUCTION

### ECONOMICS INSTITUTE DETERMINES PIPELINE ROUTING

Tallinn SOVETSKAYA ESTONIYA in Russian 10 Sep 82 p 2

[Article by A. Favorskaya: "Where Should The Gas Pipeline Go?"]

[Text] Only the specialists know the entire complexity of the answer to the question. Should the route be laid through centers containing the largest number of potential users of the gas? Or where construction of branch lines would be cheaper and labor outlays would be lower? Moreover other forms of fuel--coal and fuel oil--are also usually employed in the region of the planned gas pipeline system. Consequently the proportion of these fuels in the overall picture must be considered as well. But in this region, new enterprises may appear in the future and more gas would be required: Consequently we would need to foresee this also, given the preset gas availability. And the rate of development of deposits must be accounted for, and even the pipe diameter and gas pressure, so that the gas would be able to reach the required point.

"Add to this that we must also necessarily account for the interests of nature conservation. In other words the solution to the problem must simultaneously satisfy many needs, and as you can see, they can be contradictory: The cheapest variant of the gas pipeline, for example, is not necessarily the thriftiest in relation to nature," Mikhail Korchemkin (a senior scientific associate and a candidate of economic sciences) explained to me what is referred to in the language of science as a multiple-criterion approach to solving a complex dynamic problem.

We, dear reader, are now in the sector for mathematical economics of the Economics Institute, Estonian SSR Academy of Sciences. And although natural gas is extracted thousands of kilometers from Tallinn, the fate of the gas pipelines through which it passes to the consumer is decided to a great extent here as well. The fact is that the problem of such great complexity described above--optimizing gas supply in a given region--cannot be solved without mathematical economic calculations with a computer. This requires special mathematical machinery--mathematical models and a package of programs which have to be constantly updated as the client imposes new requirements. All of this has been worked out by colleagues of the sector under the guidance of its founder and its director since its founding, Il'ya Zalmanovich Kaganovich. The novelty of this work lies precisely in the multiple-criterion approach it

uses, which permits simultaneous consideration of all required factors. How much would a cubic meter of gas cost in a given locale? Would the advantage of using gas in this place make laying a branch to it worthwhile? The sector's specialists have now been systematically answering such questions associated with concrete calculations for 15 years, and even more.

"How much territory have we dealt with in this time?" Paavo Rooba, a group leader in the sector pondered for a moment and then began: "All of the Baltic republics.... Belorussia.... And the Northwestern regions--the Karelian ASSR, Leningrad and Vologda oblasts...."

The sector works out contract details with the "Giprospetsgaz"--the State Institute for the Planning of Main Pipelines. "Giprospetsgaz" prefers a different name for their cooperation--creative contacts. Recently it sent a letter to the sector recalling the large number of studies to determine technical-economic, technical plans and gas supply diagrams they had worked out jointly for different regions of the USSR. The letter expressed thanks for the fact that these contacts were making the calculations more easy to explain, and that in the final analysis they were reducing the cost of gas pipeline construction. But of course the letter was sent for more than just praise. It also contains lines of greater importance, discussing the fact that "Giprospetsgaz" was interested in further creative cooperation and was asking to take part in a project titled "Determination of the Suitability of Planning and Erecting Main and Branch Gas Pipelines to Transport Gas From the Yamal Peninsula to Northwestern and Central Regions of the USSR in the Period to the Year 2000."

Jointly with sector institutes, in the last five-year plan the sector drew up instructions on performing mathematical economic calculations with a computer during the planning of regional gas supply systems, and submitted it as a proposal to the Ministry of Gas Industry. After this proposal was introduced, the real annual impact was a little less than a million rubles.

"In general, it is a very difficult thing to develop a mathematical model that would correspond to the given optimization problem," said M. Korchemkin. "The uncertainty of the raw data is very great, since there are no accurate data on gas production and consumption and the figures are given as ranges of values. Candidate of Sciences A. Laur has joined this effort."

We could perhaps learn even more interesting things about the daily work being done in the sector by one doctor, six candidates of sciences and another three colleagues. But this would all be of more interest to specialists. I will simply note here just one more new direction that has been assumed by Sergey Magylin, a junior scientific associate: He is drawing up forecasts for citywide gas requirements as correlated with weather forecasts. This is very important to know for efficient gas consumption.

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## PIPELINE CONSTRUCTION

### PREPARATION TO LAY PIPELINE ACROSS VOLGA UNDERWAY

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 19 Sep 82 p 1

[Article by Correspondent R. Valeyev, Kazan-Zvenigovo: "Let the Volga Waters Part"]

[Text] We are traveling on the Volga aboard the metrological vessel "Oskol." There is a little bit more than 7 feet beneath the keel.

"This is where the pipe will cross the Volga," Vladimir Vanzhula, foreman of the underwater technical operations section pointed at the gray waves. That's an easy thing to say: to cross. The 2 kilometers of pipe will weigh 400 tons, and to make matters worse it will have to be laid in the water.

Drawings of the underwater gas main were spread out on the captain's bridge. The steel pipe wound its way over the bottom of the river like a rubber hose, hugging the underwater cliffs and diving into bottomless canyons. Soon these drawings will transform into a steel main. There seems to be nothing but obstacles on the route of the Urengoy-Uzhgorod gas pipeline! And here, beside the city of Zvenigovo, the pipeline has met the Volga.

Construction of the crossing is now in full swing. It is being directed by specialists of the Kazan Specialized Administration for Underwater Technical Operations. To the layman's eye everything seems to be as it usually is: "Meteors" slide over the watery flats, steamships float grandly by, and fishing boats sit motionless in the water. And right next door three dredgers are cleaning the bottom with powerful scoops and pumps.

The "Oskol" moored to the side of one of them. Artur Vagapov barked an order from the captain's bridge: "Raise the boom! Check the engine!" And he himself descended to the base of the crane arm. On deck there was an entire mountain of blackened branches of the most monstrous shapes. The boom snagged another submerged log. It was responsible for keeping the dirt out of the pump, such that the dredger could do nothing more than put out an "artesian fountain": A white column of clean water was shooting out of the pipe. But this time they were in luck: They did not need the divers.

Motor mechanic Aleksandr Kartuzov took a second to check the depth. The 7-meter trench dug in the river bottom had to be oriented strictly according to

the drawings. The parameters of the trench were checked with a multiple-beam echo sounder installed aboard the "Oskol."

Soon it is time for the divers to go to work. Giving the signal from a portable radio, Nikolay Gavrilov and the foreman of the diver group, Fargat Shaydullin, help Nikolay Konokorov into his diving suit. He descends in his 80-kilogram pressure suit to check the trench that had been dug the day before. Forty minutes later his copper diving helmet appeared on the surface: Everything's in order!

V. I. Semenov, the commander of the dredger, counts on his fingers: "Sylva, Sura, Iren', Vyatka, Ilet'.... And now the Volga...." He was listing the rivers that had been crossed by the gas pipeline. One could not say of any of these rivers, both large and small, that they were easy. But the Volga is a completely different situation. Its depth, the sunken logs, the underwater islands and the busy vessel traffic have to be reckoned with. Each day each dredger moves forward 10-15 meters, and three times a day the "Oskol" quickly moves the anchors of the dredgers. Forward, only forward! The motor mechanics, divers and geodesists are all working here with the same goal--completing the trench on schedule and begin laying the strands of the gas pipeline across the Volga bottom by the start of October.

Preparations are being made for this day on the left bank. A cozy town of pre-fabricated houses was laid out here. Here at the starting point, pipes prepared for lowering stretch out like giant snakes. These 200-meter lengths were delivered from Kazan. Several years ago no one would have believed that pipes could be assembled far away from the welding site and delivered by water. In former times pipes were shipped in from afar in 10-meter pieces, after which it took a long time to assemble and test them. Now the lengths are assembled and tested at a central base in Kazan, after which the ends are plugged, and tractors drop the pipes into the water. Each of them weighs 90 tons. Powerful tugs drag this unusual raft of steel "timbers" almost a meter and a half in diameter to this place, Zvenigovo. It takes them less than a day to travel 70 kilometers.

One more thing I would like to mention. "TG-501" pipelayers manufactured by the Cheboksary Industrial Tractor Plant are now beginning to arrive in Zvenigovo. Two years ago the American authorities halted deliveries of tools to make this powerful tractor. The workers of Cheboksary then decided to support production of the machines through their own efforts. And now we have our own pipelayers! Now these mechanisms are coming to the aid of the gas pipeline's builders. In October they will surmount the Volga with one swift leap.

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## PIPELINE CONSTRUCTION

### EX-SERVICEMEN HELP BUILD GAS PIPELINE

Moscow KRSNAYA ZVEZDA in Russian 18 Sep 82 p 2

[Article by KRSNAYA ZVEZDA Correspondent Ye. Sorokin: "Between the Volga and the Sura"]

[Text] The standard time limit for remaining under water had lapsed. Nikolay Gavrilov could tell this without looking at his watch. He could feel a cold sweat beginning to cover his forehead, his breathing was faster, and it was becoming harder to move.

"Time to go up," Gavrilov heard the hollow voice of Fargat Shaydulin, the chief of the diving station, through his earphones.

"O. K., hold your horses," Gavrilov tried to speak calmly, though an anxious thought was boring into his head: He had lost his bearings. He raised his hand to right his hose, and he shuddered: There was something hard over his head. Was he really beneath the bottom of the dredger?

Yes, so it was. Gavrilov reported to the surface:

"The dredger is above me."

These words, amplified by a loudspeaker, resounded on the launch like thunder out of a clear blue sky. For the first time in 8 years of work, Shaydulin was unnerved. A decision had to be made without delay--there was little time left.

"Don't worry," Fargat ordered, banking on intuition: "Move backward, carefully!"

The confident tone of the order raised Gavrilov's courage.

"Yes, Comrade Sergeant!"

Shaydulin compelled him to report literally on his every step. So it was that Fargat guided the actions of his comrade from the launch, until the latter made it out from beneath the dredger. Having decided that the danger was passed, Gavrilov would have rushed straight up, but Shaydulin checked him abruptly:

"Where are you going? Stop at 15 meters!"

It was not until he had rested in the pressure chamber that Gavrilov came to the realization of what Shaydulin had done for him. And he silently, gratefully smiled at his comrade.

It was a long time since Gavrilov had referred to Shaydulin as the sergeant. He had obviously recalled that difficult moment when, on arriving in the frogman subunit commanded by Major Yu. Rogozhkin, Voropayev and he--two novices--began their training with Sergeant Shaydulin. And how he harassed them! At least that was the way it seemed at the time. But after they learned the ropes, they came to realize that there was good reason behind the sergeant's nagging. Many times subsequently they recalled the harsh school of army seasoning with kind words. And often at times they thought: Where is he now, that Sergeant Shaydulin?

He was right next door, as it turned out. Fargat Shaydulin arrived with his section on the bank of the Volga to prepare for the laying of an inverted syphon. He was warned: It was not going to be an easy job, and therefore he was going to get the most dependable helpers. They arrived, and to his surprise they were Gavrilov and Voropayev.

A diver is a special person in the construction of the gas pipeline. He is the eyes and ears of all underwater technical operations. Here in the channel of the Volga, divers work at a depth of up to 30 meters. They are allowed to remain beneath the water for only 2 hours a day. During this time they have much to do. They must determine the depth of the trench dug by the dredger and the composition of the ground. The divers are aware of the value of their time. Especially since any waste in their work could lead to uncorrectable consequences.

Discussing their work on the gas pipeline route, many compare the working conditions with those they had endured in the army. Here also one needs the same ability to make a home in places where man has never set foot, and to establish normal living conditions in a harsh land. Here also is the same strict discipline, and complete devotion to the work.

I met an amazing person here--Lieutenant Colonel (Reserve) Filipp Filippovich Somenko. One looks at this strong, elderly person, with whom one can barely keep up with a fast clip, and thinks in disbelief: Is he really pushing eighty?

"Yes, I'm seventy-two," Filipp Filippovich confirmed. "But what's so surprising about that? I'm a soldier, after all. And I'm proud of the young lads who join us after the army. It is because of their army background that they are referred to as the construction project Guards."

In just 2 months they had in fact built up a town with a water supply, dining hall and store. The whole effort is managed by Somenko. What kind of people does it take to do this? Military people, first of all. It is no wonder that the pipeline layers often say: "Let's do it in the military way." That means quickly, intelligently, conscientiously.

Nikolay Vasil'yevich Polikarpov still remembers the following incident well, even though it happened 20 years ago. It was when he was in the army. Gathering them--the sergeants--together for a lesson, the company commander explained the situation and said:

"You have 5 minutes to think the problem out."

Sergeant Polikarpov joked:

"But can we have six?"

The company commander turned his eyes on him with a silent, attentive gaze. And then he told the following story.

"I was at the front. I was 'green' at the time--it was my first day of fighting. They gave the signal: 'Attack!' I lay on the bottom of my fox-hole and thought: 'Let me have at least another minute, half a minute.... Just a few seconds more.' For some reason I felt that if I stood up, I would be killed.

"And so, sergeant, while I was counting those seconds, an entire half hour went by. And so I never rose up to the attack. My friends and the enlisted men knew what I was going through, and they forgave me. But I could never forgive myself for those extra minutes of deliberation."

And so it was, from that time on, that Polikarpov has been intolerant of cowardice.

Polikarpov had his own word for the giant pipeline--the "tube." But the brigade leader has every right to such a flippant attitude. Bukhara-Ural, Nadym-Punga-Nizhnyaya Tura, Perm-Kazan-Gorkiy, Surgut-Polotsk: This is far from a complete list of the pipelines which Nikolay Vasil'yevich helped build.

His experience tells him that wherever equipment is powerless, a workman's boldness comes to the rescue. Once the brigade found itself short of the required number of pipelayers. Were they to wait for several days until the equipment would arrive? He gathered the brigade members together to discuss the problem. All of them--F. Gil'manov, V. Paramonov, V. Mel'nikov, A. Burgart, S. Bochkhanov and I. Sokolov--came to unanimous agreement: A bulldozer could be used in place of one of the pipelayers to help support the pipe.

Laying a pipe into a trench is a complex operation. It is only outwardly that the pipe looks so clumsy. It can also be nimble and spry. Polikarpov says "roguish." And he knows what he is talking about.

With great caution they began their work, having foreseen every detail. And the pipe was obedient to the experience of the masters this time as well.

That is what is meant by 5 minutes to think, and no more.

"In our section the pipeline grows a kilometer in a day," said Vladimir Il'ich Gabuyev, chief of "Kuybyshevtruboprovodstroy" Trust's Garage No 1. "There was a time when we could not even have dreamed of such a pace."

Gabuyev is one of those who represents a new special breed of indefatigable people considered strange by the standards of our mundane life--the pipeline layers.

What does his work involve today? There are the "Sever-1" complexes for contact arc welding of pipes, rotary excavators with a productivity of 1,200 cubic meters per hour, pipelayers with a lifting capacity of 50 tons and dredgers with a productivity of 300 cubic meters per hour. The diameter of the pipe that must be laid in the trenches is close to the average height of a man--1,420 millimeters. An unrestrainable rush of gas equivalent to 40 million tons of comparison fuel will be pushed through it by a pressure of 75 atmospheres.

I cannot keep from citing a few more figures which astound even those of us who have become indifferent to the fantastic. Every 1,000 kilometers of the route are equivalent to a million tons of metal. The amount of power required to pump gas in such a section of pipeline is not less than that produced by the modern Dneprogas--800 megawatts. Fifty million cubic meters of dirt must be dug out of the foundation pits and trenches, and then put back.

These are the millions which today's Soviet pipeline layer deals with today. But in the course of several decades something else was accumulated as well--a sense of professional pride, mutual assistance and high responsibility for the country's "arteries of life."

It was spring 1946. Vladimir Gabuyev took charge of a garage belonging to the "Vostoknefteprovodstroy" Trust, which had just been formed. Low-power ZIS trucks wound their way along the road into Tambov Oblast. They were building a petroleum pipeline which was thought to be long in those days--180 kilometers. There were neither excavators nor bulldozers. It could be said that they were building it by hand.

They dug the trench from early morning to late at night. Working together, they were able to move the improbably heavy pipes. They sprayed hot bitumen over them, and they wiped them down with towels. When vehicles got stuck in the mud, they were pulled out with cables with steel-wrenching effort. But the people stubbornly went forward. One kilometer after another.

Some of the veterans still work for the garage, though they are now pensioners--A. Kireyev, T. Lyapuntsov, P. Malyshenko and A. Mukhamedzyanov. Recalling those times, they say little about the difficulties. They remember more about what they had thought at that time. In the evenings, gathering together at the campfires, they dreamed about powerful equipment and about cozy settlements for gas pipeline layers. Settlements which would offer baths, a store, a dining hall, and perhaps even a swimming pool.



And now we have them, the pipeline towns. They have saunas, cozy warm houses and swimming pools.

In a little while, news comes from the route of the Urengoy-Uzhgorod gas pipeline in a form somewhat resembling battle summaries. Tests on the 166-kilometer section in Saratov Oblast have started. The Kama has been conquered. The Volga is next. The collective of this production unit decided to fulfill its annual pledges by the 60th anniversary of the USSR. This gas pipeline, which is being coaxed along by courageous, selfless people, will extend more than four and a half thousand kilometers. And every kilometer of the route is hard. It demands stubbornness, courage and proficiency. At every kilometer.

11004

CSO: 1822/26

## PIPELINE CONSTRUCTION

### TSIVILSK SECTION OF GAS PIPELINE IS ON SCHEDULE

Moscow. KRASNAYA ZVEZDA in Russian 5 Sep 82 p 1

[Article by S. Yevgen'yev: "The Strides of the Steel Giant"]

[Excerpts] The little town of Tsivilsk, in the Chuvash ASSR, had never seen such commotion in all of its history. Powerful Soviet and foreign equipment and an endless flow of trucks and buses on "Ural" chassis invaded the town. And this represented only the equipment brought by workers of just one collective--Integrated Production Unit No 1 of "Kuybyshevtruboprovodstroy" Trust.

They selected the place for their camp on the outskirts of Tsivilsk. Dozens of large cylindrical rail cars could be seen well from the road. They are referred to here as "barrels." A store and a dining hall are under construction, pedestrian walkways are being paved, and work is going on full steam in the carpenter's shop. It is hard to believe that in just November of last year there was nothing here but an enormous field on which a single lone rail car stood.

"There were only five people in that rail car," recalls the unit chief, Lieutenant (Reserve) V. Mikhel'son, "excavator operators Aleksandr Vorovkin and Aleksandr Abayev, foreman Yuriy Semenyuk, driver Aleksandr Bychkov and I. So it was that we began here, in the same way that all gas and petroleum pipeline workers laying 'arteries of life' begin." And he added with feeling: "Only people who are really in love with their work can survive such conditions. And I don't think we have any other kind."

Love of work is something that is measured by its products. Evidence of it can be found primarily in the competition results of the brigades, which are posted on the rail car containing the construction headquarters. The brigade led by N. Zarubin welds up to 500 meters of pipeline per day. Nor is the work any slower in the collectives headed by A. Lebedev and V. Tonkikh. And as a whole, the production unit lays a kilometer of the route per day.

What does this mean? Lengths of pipes almost a meter and a half in diameter must be shipped in, welded and insulated, a trench almost 3 meters deep must be dug, the gas pipeline must be laid in it, the trench needs to be refilled, and the soil has to be revegetated. And we must constantly remember that even

the slightest imperfection could cause the powerful rush of gas, which will speed through the pipeline at a pressure of 75 atmospheres, to create a disaster.

The collective of the production unit is responsible for "only" 127 kilometers. This means surmounting 60 canyons, 15 intersections with motor roads and railroad tracks, and crossing dozens of rivers and streams. Nonetheless, the collective continues to progress, a kilometer a day. In all circumstances, and in the worst weather.

The gas pipeline layers get their strength not only from modern equipment and not only from highly qualified personnel (nine out of every 10 workers are masters of the highest rank, the sixth). This year the unit collective was one of the first in the USSR Ministry of Constuction of Petroleum and Gas Industry Enterprises to work on the basis of a unified order. Figuratively speaking, all 186 persons are now working as a single brigade. Neither the welders not the insulators nor the mechanics divide the work into "ours" and "theirs" as they did before.

Nikolay Ivanovich Zarubin, the leader of a welders' brigade, was in a bad mood: It was pouring. This meant that before welding the seams they would have to set up burners at the pipe joints and dry the welding points with a powerful flame of burning propane. And this is what they did that day.

One looks about, and is amazed by the agility and expertise of the workers. They join the multiton pipes to each other as if it were child's play. Pipelayer operator Aleksandr Ivanovich Sharagin picks up the next length of pipe with his crane, and the latter grasps the pipe at its center with its gaping jaws in such a way that the distance between the pipes does not exceed a millimeter and a half. This is the way it is supposed to be. And the length (each meter weighs a ton!) sits totally still after being put down. This is what is known as a "jeweler's precision."

Just a few seconds later welders S. Buchin, V. Prokof'yev and Yu. Sergeyev finish welding the first seam joining the pipes. And there must be four or five of them. And all of this must be done within 20 minutes!

Yes, the gasmen do know the value of time. Once--this happened in the flood plain of the treacherous Bolshoy Tsivil River--a pipelayer driven by Yu. Yevstifeyev got stuck in the mud right up to the cab. Insulator brigade leader N. Polikarpov, bulldozer operators S. Kozlov and F. Kulakov and other members of the brigade stayed with the pipelayer two nights and a day, until they finally freed it from the quagmire.

The complexities of the route also dictate the tactics the people are to take. Sometimes two pipelayers have to grasp a single length together on steep canyon slopes. They have to "crawl" beneath high-voltage power lines without interrupting the supply of electric power. Sometimes they have to use bulldozers to assist pipelayers in laying the strand of pipe into the trench.

This section of the gas pipeline now extends from the Volga to the Sura. It is one of many sections of a gas main more than four and a half thousand kilometers long. The pipeline route of the century--Urengoy-Pomary-Uzhgorod--is confidently striding across the country, surmounting all obstacles.

## PIPELINE CONSTRUCTION

### PIPELINE CONSTRUCTION BEGINS NEAR OKHOCHIEVKA

Kishinev SOVETSKAYA MOLDAVIYA in Russian 19 Sep 82 p 1

[Article by TASS Correspondent A. Shchiglenko: "Difficult Kilometers"]

[Text] The first kilometers of pipe have been laid in the trench in the Kursk section of the Urengoy-Pomary-Uzhgorod gas pipeline.

The day began sunny and clear, as if someone ordered it that way. Descending from a hill, a black trench line crossed the yellow mowed fields and headed for a small birch grove. Pipelayers and trucks were accumulated beside it. All surveyors free of duty convened together to lay the first kilometer of pipe.

A wave of a flag, and four pipelayers gently lowered the steel strand of pipe to the floor of the trench.

From ancient Yelets in Lipetsk Oblast to the Ukrainian border--this was the path that was to be traveled by the builders over Kursk soil. And although the terrain was inhabited here, there would be no less difficulties than in the taiga wilderness. They would have to force several rivers, cross busy highways and railroads and revegetate hundreds of hectares of land. Almost 35,000 joints will be welded, and gas pumping stations will be built. All jobs in this section of the pipeline are to be completed by the end of the next year.

"Integrated production units created for the route will help us complete our task," said V. Azanov, chief of Construction and Installation Administration No 4 of "Krasnodartruboprovodstroy" Trust. "What is a production unit? It is essentially a large integrated khozraschet collective. Before, for example, one brigade dug the trench, another welded the pipe, a third insulated it, and a fourth laid it and filled the trench. If anything happens to stop the work in one collective, all of the others must immediately stop as well. But in a production unit, stoppages occur much less frequently: Any problem can be corrected by everyone working together. The labor is evaluated on the basis of the end result. Now that the work is organized in this way, a high rate has become possible: one kilometer of the route every day.

Just a few months ago the first party of gas pipeline builders arrived at Okhochevka, and today an improved residential town sits beyond the outskirts of this village. It has a children's nursery, a medical station, a store, a barbershop, a repair shop and a laundry. Sidewalks have been laid, and flower gardens have been planted. It is with such thoroughness and swiftness that people having considerable experience in working in the field can settle themselves in.

11004

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## PIPELINE CONSTRUCTION

### BRIEFS

EQUIPMENT AIDS PIPELINE PROGRESS--Erection of gas pipelines in our country is continuing successfully. This is owing to the great amount of equipment being provided to the construction sites. Many machines and mechanisms developed by specialists of the "Gazstroy Mashina" Special Design Office have earned excellent recommendations in the complex conditions of the North. The "Tyumen'" BT-361 marsh vehicle, which was designed on a rush basis, is operating well. Series production of the ETR-254 rotary excavator has been organized to replace the ETR-253 excavator. It will dig trenches for pipe 1,420 mm in diameter. This year 70 rotary excavators and other machines will be shipped to the country's gas pipeline construction sites. [Text] [Moscow IZVESTIYA in Russian 29 Sep 82 p 3] 11004

PIPE HAULERS SHIPPED--Moscow--The collective of the "Gazstroy Mashina" Plant shipped a consignment of pipe haulers to the Tyumen North ahead of schedule yesterday. These trucks are intended to carry large-diameter pipes to the route of the Urengoy-Pomary-Uzhgorod gas pipeline. Built on the chassis of the "Ural-375" truck, they are distinguished by good cross-country capability and dependable operation. [Text] [Moscow GUDOK in Russian 1 Oct 82 p 1] 11004

PIPELINE PLANT UNDER CONSTRUCTION--Kharp (Tyumen Oblast)--A plant under construction in the Arctic town of Kharp will produce structures to be used in erection of compressor gas pumping stations. Six main gas pipelines leading out of the Tyumen North will be built together in the current five-year plan. The new plant will help complete the immense program of outfitting them. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 23 Sep 82 p 1] 11004

MORE PIPE LAID--Ufa--Subdivisions of the Glavvostoktruboprovodstroy laid pipe in their section of the Urengoy-Novopskov gas pipeline ahead of schedule. Having completed the laying operation, they have surrendered a section more than 1,100 kilometers long for testing and final adjustments. After the tests are finished, the builders will be able to significantly increase their pace in erecting the second gas main, Urengoy-Pomary-Uzhgorod, concentrating all of their efforts on the new route. Here, enterprises of Glavvostoktruboprovodstroy have the job of laying a 1,400 kilometer section. The pledges adopted by the collective foresee completion of this section ahead of schedule as well--in the third quarter of 1983. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Sep 82 p 1] 11004

GAS CLEANING PUMPS SHIPPED--Riga--The collective of the "Rigakhimmash" Plant completed an order from builders of the Urengoy-Pomary-Uzhgorod gas pipeline ahead of schedule. A consignment of pumps to be used to remove impurities from gas has been shipped to the route. Production went ahead of schedule owing to introduction of a large number of innovative proposals. [Text] [Kishinev SOVETSKAYA MOLDAVIYA in Russian 2 Oct 82 p 1] 11004

SUPPORT TO GAS PIPELINES--The Lvov "L'vovpribor" Plant has started preparations for series production of centralized monitoring and control apparatus for compressor stations to be located on the Urengoy-Uzhgorod gas pipeline. Having signed a contract of creative cooperation with their associates, the instrument makers have pledged to begin production of the new products in the fourth quarter, rather than at the beginning of the next year, as had been planned. Workers of the Riga Diesel Building Plant have already manufactured a large consignment of engines and many extra spare parts for gas pumping units, all within the third quarter. Several marine transporters loaded with large-diameter pipes arrived at the wharves of the port of Novyy, located in the Bay of Ob', from the Federal Republic of Germany. Taking up the space of several railroad cars, a high-power gas pumping unit has been shipped from the sidings of the Khabarovsk "Energomash" Plant to the construction site of the Urengoy-Pomary-Uzhgorod gas pipeline. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 30, Jul 82 p 3] 11004

MORE PIPE LAID--The thousandth kilometer of pipe has been welded into a single strand along the route of the Urengoy-Pomary-Uzhgorod export gas pipeline. Work on the 4,460 kilometer route has entered its decisive phase. Production collectives of the Soyuzgazspetsstroy Trust headed by I. Rozanov and S. Muzhiv have completed their socialist pledges in honor of the 60th anniversary of the USSR ahead of schedule. They are completing installation of the gas main within their 240 kilometer section from Algasov to Yelets. The collective of the production unit of the Soyuzintergazstroy Association's Transcaucasian Pipeline Construction Administration No 1, which is laying a gas main through the Carpathians, has proposed a new patriotic initiative. It has decided to lay a 60 kilometer section of the Urengoy-Pomary-Uzhgorod gas main by the 60th anniversary of the USSR's formation and, connecting it to the "Bogorodchany" compressor station of the "Soyuz" gas pipeline, to begin running the blue fuel through the Dolina-Uzhgorod gas pipeline. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 1 Oct 82 p 1] 11004

EQUIPMENT FROM ARMENIA--The Kirovakan "Avtogenmash" Plant in Armenia is among the enterprises providing equipment support to construction of the Urengoy-Pomary-Uzhgorod export gas pipeline. It produces gas welding and cutting units. [Text] [Moscow PRAVDA in Russian 3 Oct 82 p 1] 11004

GAS PUMPS FOR PIPELINE--The collective of the Sumi Machine Building Association imeni M. V. Frunze has begun production of gas pumping units for the Urengoy-Pomary-Uzhgorod gas main. The first unit was shipped today to the pipeline route. By the end of the year the plant collective intends to manufacture another five such machines. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 26 Sep 82 p 1] 11004

PUMP CONSIGNMENT FOR PIPELINE--Orel--The products of the "Livgidromash" Association enjoy a high demand not only in the national economy of our country but also far beyond its borders. Assuming a shock watch in honor of the 60th anniversary of the USSR's formation, the collective of shop No 12 of this enterprise manufactured another consignment of pumps for builders of the Urengoy-Uzhgorod gas pipeline. Other shops of the association are also producing hydraulic machines for this construction product, the most important in the country. The association's workers and specialists have guaranteed that the entire quantity of pumping products they have planned to produce will be of high quality and will be delivered ahead of schedule. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 27 Sep 82 p 11 11004

IVATSEVICH-DOLINA PIPELINE OPERATIONAL--Lvov, 2 October (RATAU correspondent)--The last 22-kilometer section of the Ivatsevichi-Dolina gas pipeline is now operational. Yesterday's tests proved the quality of the entire complex of pipe welding, insulating and laying operations to be high. The honorable right to report completion of the construction of the straight section of the gas main fell upon ambassadors of the Russian Federation from the "Shchekingazstroy" Trust, who labored side by side with workers from Leningrad and with representatives from the Ukraine, Belorussia and the Central Asian republics. From this moment on, there will be three strands operating along the more than 500 kilometer stretch of the gas pipeline. Having extended the route from Ukhta through Torzhok and Minsk to Ivatsevichi, it has made it possible to significantly improve the supply of northern blue fuel to the western oblasts of the Ukraine and to increase its export into countries of the socialist fraternity. Completion of the last section coincided with acceptance of the "Kovel'" compressor station by the state commission. The new output capacities make it possible to significantly increase the system's throughput. The Ivatsevichi-Dolina pipeline is one of the largest laid over the republic's territory. Pipes of large diameter were used on an extensive scale here. Experience acquired during the laying of this gas main will be utilized during erection of the Urengoy-Uzhgorod gas pipeline. A significant proportion of the construction subdivisions and powerful equipment have already been redeployed at the new route, where the work pace is increasing with every day. [Text] [Kiev PRAVDA UKRAINY in Russian 3 Oct 82 p 1] 11004

PIPE WELDING BASE COMPLETED--Mari ASSR--Erection of a pipe welding base has been completed at the Pomary Railroad Station. Another section of the Urengoy-Pomary-Uzhgorod export gas pipeline will take its start from this base. Equipment from Kiev, Chelyabinsk and Ufa has been put together and installed. It is now undergoing adjustment. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 19 Sep 82 p 3] 11004

GAS PIPELINES CROSS--Tyumen--Dozens of water and other obstacles have been surmounted by the Urengoy-Pomary-Uzhgorod gas pipeline, presently under construction, just in the Tyumen section alone. Here, not far from Nadym, it was planned to cross another channel--an unusual one at that. Consisting of six pressurized arteries, it is now carrying Siberian blue fuel to the country's western regions. The important task of crossing this pipeline was given to pipeline layers of the "Severtruboprovodstroy" Trust's Construction and



Installation Administration No 5. In a short time a tunnel was dug beneath the operating pipelines. Welders prepared 100-meter lengths of the pipe, which were then dragged along the floor of the trench to span the entire working corridor. This task was successfully completed this last week. A high class of proficiency was displayed in this work by excavator operator B. Salakhov, pipelayer operators V. Burlak and V. Nardyzhev, four arc welders headed by brigade leader V. Igoshev and others. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 6 Oct 82 p 1] 11004

PUMPING STATION FINISHED EARLY--Ufa--The standard time for erecting a high capacity pumping station was beat by 5 months on the Surgut-Polotsk petroleum pipeline, presently under construction. The new station, which was named "Mostovaya," has been placed into operation. It is now the third on the route extending from West Siberia to the country's center. The first two were also placed into operation ahead of schedule by the collective of the general contracting organization, the "Bashneftpromstroy" Trust's Construction and Installation Administration No 6 and its subcontracting organizations. In the competition for early completion of new pumping capacities on main pipelines, V. Kalashnikov's installer brigade, Yu. Shumatova's concrete layer brigade and M. Gil'met'yanov's carpenter brigade attained high work indicators. [By I. Payvin] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 3 Sep 82 p 1] 11004

AIR COOLER MOTORS--Moscow--Motors for air coolers to be delivered to the Urengoy-Pomary-Uzhgorog gas pipeline have been manufactured in a northern modification. The first consignment of such motors was shipped today to the clients by the collective of the Electromechanical Plant imeni Vladimir Il'ich. This is not the first year the enterprise has been manufacturing such products. However, this was the first time it assimilated production of explosion-proof equipment intended for operation in the North. Following a tight schedule, the enterprise's specialists made changes in the production procedures and selected insulating materials and linings having properties that would remain constant at low temperatures. Before the end of the year the collective of the enterprise intends to produce 40 such machines. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 20 Oct 82 p 1] 11004

PIPELINE OPERATOR TRAINING--Tyumen--The Urengoy-Pomary-Uzhgorod gas main will be serviced by truly proficient specialists. The responsibility of training specialists for the route was accepted by the institutes, tekhnikums and training-production combines of West Siberia. Thus gas industry's tekhnikum, which was opened recently in Novyy Urengoy--right at the start of the gas main--will begin to train about 400 highly skilled specialists each year. "We believe training the operators to be the key to successful operation of the gas pipeline," said G. Krylov, deputy chief of the All-Union "Tyumen'gazprom" Industrial Association. "The steel main is a most sophisticated enterprise equipped in accordance with the latest achievements of science and technology. Whatever the quality of the knowledge possessed by the people assuming control at the consoles, so will be the payoff from the equipment. All of this has been accounted for in the personnel training program." In addition to middle-level specialists, the schools are also training engineers to serve as shift and

section leaders. Training in needed specialities such as gas pipeline planning and operation and gas deposit development and exploitation has been organized for the first time at the Tyumen Industrial Institute. The practical phase of training will begin concurrently with installation of gas pumping units. The operators have decided to arrive at the station simultaneously with the builders and adjusters. This will make it possible for them to learn the equipment down to the last bolt. [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 2 Oct 82 p 1] 11004

PIPELINE CROSSING VOLGA--Zvenigovo, Mari ASSR--Builders have completed preparation of a siphon crossing the Volga, part of the 2,242 kilometer route of the Urengoy-Ponary-Uzhgorod gas pipeline. And although they are well aware of the river's character--this is the 40th time it is being crossed--the Volga once again offered many surprises. "The portion of the channel in the vicinity of Zvenigovo, where the siphon will be laid," said V. Pelipenko, chief of the Administration for Underwater Technical Operations No 4, "is abundant with sunken logs, and the river is perpetually filling the pipe trench with mud. We have also encountered hard ground that does not yield to ordinary equipment." The "Podvodnik-1," a dredger adapted for work in such conditions, came to the rescue. The crew of the vessel supported the initiative of the builders, pledging to finish the Volga crossing ahead of schedule. Having ferried the vessel from the Kama in just 5 days, the crew of the "Podvodnik-1" prepared it for operation in just half of the usual time. Now more than 50 meters of the underwater bed for the gas pipeline are being dug each day. Work is also going on around the clock on land. On the left bank of the Volga, which is more than 2 kilometers wide at this point, 12 200-meter lengths of the siphon have been prepared. It was assembled at a special testing ground in Kazan. The pipes were welded together into lengths on a mechanized rack, then they were tested with a pressure of up to 100 atmospheres, and the quality of the welded seams was checked with X-rays. The final operations are coming to an end. The people and the equipment are ready to cross the largest of 30 rivers along the route. The builders have promised to complete this complex section more than half a year ahead of schedule in honor of the 60th anniversary of the USSR's formation. [By N. Sorokin and A. Sul'din] [Text] [Moscow SOTIALISTICHESKAYA INDUSTRIYA in Russian 9 Oct 82 p 1] 11004

CSO: 1822/26

## COMPRESSOR STATIONS

### SVERDLOVSK MANUFACTURES PARTS FOR PIPELINE

Moscow STROITEL'NAYA GAZETA in Russian 26 Sep 82 p 1

[Article by Correspondent N. Pozhidayeva, USSR Ministry of Installation and Special Construction Work Press Center]

[Text] Seven gas compressor stations will rise up in Ivdel along the routes of main and branch gas pipelines. The "Uralmetallurgkonstruktsiya" Production Association has begun production of enlarged pipeline units in Sverdlovsk for gas compressor stations on the Urengoy-Center and Urengoy-Uzhgorod routes. Of the 900 tons of required units for the new Ivdel station on the Urengoy-Novopskov route, which is being installed by the Uralmetallurgmontazh Trust, 320 were shipped by as early mid-September.

The meeting was a lively one. Electric welder N. Kamayev, V. Khrushchev, the foreman of the section in which the enlarged pipeline units are being installed, and all engineers and workers speaking at the meeting were unanimous in their resolve: The shop collective pledged to complete the orders for the gas compressor stations ahead of schedule and with excellent quality.

Construction of gas compressors is a new thing to subdivisions of the USSR Ministry of Installation and Special Construction Work. Their erection in poorly accessible, sparsely inhabited regions of West Siberia and the northern part of the Central Ural is associated with sizable difficulties.

"The obstacles which nature placed before the builders and the tight schedule for installation of the compressor stations forced us to seek new technical concepts," explained the association's director, A. Raykhlin. "We found it absolutely necessary to place manufacture of the pipe units on an industrial foundation, and to reduce, to the extent possible, the amount of assembly and installation that must be done at the assembly site, where hundreds of tons of gas pipe fittings and parts must be assembled and welded beneath the open sky. The engineering services kept having to solve more and more new problems."

Semiautomatic welding in a carbon dioxide medium using a consumable electrode was used here for the first time to manufacture high-pressure pipeline units. And multiple gas burners designed by specialists of the Uralmetallurgmontazh Trust were used to maintain the required temperature. The plant's innovators manufactured a special roller-equipped support which helps to join pipes to parts of complex shape.

Owing to mechanization, the labor-intensiveness of work done at the first Ivdel station, which was installed by the Uralmetallurgmontazh Trust, was reduced by 40 percent.

A new compressor station is growing within the Ural forest--the heart of the gas pipeline. Installers are working on it at full steam. And the wheels of long flatcars are rattling over the railroad from Sverdlovsk to Ivdel, carrying modular equipment characterized by high plant readiness to the construction site. Only two butt joints will have to be welded to install the station into the production flow.

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## COMPRESSOR STATIONS

### PERM OBLAST CONTRIBUTES TO PIPELINE

Moscow PRAVDA in Russian 10 Oct 82 p 1

[Article by PRAVDA correspondent V. Cherapanov: "The Tests Were Passed "]

[Text] "Manufacture all of the equipment needed for timely commissioning of the Urengoy-Pomary-Uzhgorod export gas pipeline ahead of schedule and with high quality": This is the slogan under which the collectives of many industrial enterprises of the Western Ural are competing in their effort to complete the orders for the shock construction project.

The Perm "Motorostroitel'" Production Association imeni Ya. M. Sverdlov received the following telegram from Kazan: "The first NK-16-ST gas turbine engine, in which parts furnished by you were used, has successfully completed its tests and was shipped to its place of use...."

The motor building collective had been waiting for this news impatiently. The fact is that it was given the assignment to work in cooperation with other enterprises on the drive system of propulsion units for gas compressor stations and to organize production of a number of the associated units and parts. An NK-8 aircraft engine that had served out its useful life was adopted as the basis for the design. Of course, a significant amount of extra work had to be done to adapt it for operation in unusual conditions and to convert it from liquid to gas fuel.

Process engineers and designers handled this task excellently, and they issued the necessary documentation to the shops in short time. The first lot of associated parts was manufactured and shipped for assembly to the Kazan Motor Building Association 2 weeks ahead of schedule. But the final evaluation of the articles had to await the tests. And now the motor builders knew that all of the units and parts were working well. They began series production of parts for the drive system.

"Completion of this honorable order has been placed under constant control by our collective," explained the secretary of the association's party committee, B. Pozharskiy. "Supply of associated parts on schedule is a factor mandatorily considered when prizewinning places are awarded in the socialist competition."

The collective of the Lysva Turbogenerator Plant must design a powerful engine with adjustable rpm. What is it needed for? So that in even the most

unexpected situations, when gas pressure increases or falls sharply, the gas flow could be maintained uniform and accidents could be prevented.

"In principle, such engines can quite adequately replace gas turbines at pumping facilities," said the plant's chief engineer S. Timoshok. "The technical documents for the new engine have already been developed, the tools have been manufactured, and soon it will be time to begin the engine's production."

The collectives of a number of other enterprises in the Western Ural are trying to satisfy the orders of the most important construction project better. Powerful pipelayers with a loading capacity of 12 and 35 tons are being delivered to the section of the route between Urengoy and the western border by the Ocher Machine Building Plant. In the fourth quarter it will ship not less than 90 such pipelayers. The Perm Telephone Plant is manufacturing an additional lot of TA-200 shaft telephones and other products for builders of the export gas pipeline.

Specialists of the Perm "Uralgiprolesdrevprom" Institute completed plans for well-provided settlements that will be erected beside the gas compressor stations. There are plans to build children's nurseries, schools, stores and dining halls in these settlements. They will be furnished with intercity communication. Some of the residential buildings for builders of the trans-continental gas main will be built by the collective of the Perm Residential Construction Combine.

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## COMPRESSOR STATIONS

### SHAFTS FOR GTN-25 GAS PUMPING UNIT FINISHED

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 9 Sep 82 p 1

[Article by O. Rogozin: "Ahead of Schedule"]

[Text] On the right bank of the Neva, in shops of the "Leningradskiy Metallicheskiy Zavod" Production Association, final processing of the shaft for a turbine to be included in the "GTN-25" gas pumping unit has been finished. This shaft is now being ferried to the left bank--to the Nevskiy Plant imeni V. I. Lenin, where assembly of the first machine for the Siberia-West Europe gas pipeline has begun.

Processing shafts for a high-power gas turbine unit is a laborious operation. Shafts of two types are needed here--for the turbine and for the supercharger. All shafts are being processed by a Komsomol youth brigade working at the rotor shop of the Metallicheskiy plant.

By the way, at the time when this shop received its first intermediate products for the "GTN-25," Nikolay Malakanchikov's youth brigade did not exist yet. There was simply a group of young workers, each of whom was concerned only with his own part of the work. The new order united the lads: On 1 September the brigade celebrated its one-month birthday. It celebrated it with honor: The young workers surpassed the plan (the main order in the plan was for units of the gas pumping assembly).

The shafts of the main "GTN-25" machine turned for several days beneath the cutting tools of the turners. Twice these multiton parts were mounted on the lathe. The first time they were black, covered with oxides created during forging. After being worked on the lathe they were sent to the furnace--to reduce the internal stresses. Then the shafts were returned to the turners for final processing. Now these units are completely ready for shipment to the Nevskiy Plant for assembly in the testing shop.

The first problem the turners encountered was the unevenness of the first six intermediate products. After forging and heat treatment, the long shafts sagged as they cooled. Just try turning uneven "humped" parts!! The shop newspaper, the KOMSOMOL'SKIY PROZHEKTOR, was able to come up with a solution to the problem: Now the intermediate products will be placed in special devices for cooling.

An enormous amount of work fell upon the shoulders of the plant's designers and process engineers. The drawings and specifications of the new machine were completely translated into the norms and standards of the plant by the "Turbina" Special Design Office.

"We had to draw up materials lists for hundreds of thousands of parts and select the materials and intermediate products to be used in production," said Andrey Zhukov, a young designer.

"And we had to prepare hundreds of drawings," added his colleague, Sergey Ryabov. "But all of this is now far behind us. We are now planning testing units for the individual units and structures."

There is not much time left before testing of the pilot model.

Every morning the "GTN-25" production staff convenes in the office of the Metallicheskiy plant's general director. Every day Sergey Babenko, the shop Komsomol organizer and foreman of the rotor section that is turning out the shafts, checks the work schedule. According to his estimate the Komsomol brigade is 6 days ahead. Every evening the plant's planners summarize the results.

Assembly of the first machine has already begun on the other side of the river-- at the Nevskiy Plant. To hasten its production, the Nevskiy and Metallicheskiy plants are working on parallel schedules. Shops of the Nevskiy Plant are manufacturing the compressor units of the machine while the Metallicheskiy plant is making the turbine parts.

The first Leningrad gas turbine supercharger will be finished in January.

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## RELATED EQUIPMENT

### PIPE CLEANING, INSULATING MACHINE SHIPPED TO URENGOY

Leningrad LENINGRADSKAYA PRAVDA in Russian 7 Sep 82 p 1

[Article by O. Berkutov, chief, assembly shop, Leningrad Machine Building Plant: "Combines for Urengoy"]

[Excerpts] Making combines to clean and insulate piping for gas mains about a meter and a half in diameter is not a simple thing. It was not that long ago that we began producing them. But now, rush delivery of a large consignment of such machines in support of construction of the Urengoy-Uzhgorod gas main is a doubly complex task. This is precisely the task which the plant collective posed to itself in response to an appeal from the party. Here is what we wrote down as one of our socialist pledges in honor of the 60th anniversary of the USSR's formation: "Complete the annual program for deliveries of combines for 1,420 millimeter diameter pipes in the third quarter of the current year."

One could hardly hope to find a person at the enterprise who would not understand how significant the fastest possible completion of this task is, given the evolved international situation. Many of the leading producers confirmed the common desire to keep the promise at workers' meetings in our shop and in other subdivisions of the plant. This decision necessitated mobilization of all creative effort, of all reserves. After all, the work volume grew dramatically everywhere. In our machine assembly shop, we could not do without mutual assistance. The common concern united the people. Mutual assistance among the workers manifested itself especially clearly in a competition organized by communists. There are many outstanding specialists in the brigade led by party member V. F. Tyrkin, which is responsible for general assembly of the machines. As an example they came to the assistance of workers of the metallic parts shop when it found itself short of manpower at a time when 20 sheets had to be worked into frames for the machine rotors. The members of this brigade took on the job of drilling the holes and cutting the threads.

Our regular assemblers did many machine tool jobs in aid of comrades in other shops, processing shafts, brushes and the scrapers for the combines. In this way they hastened the delivery of parts to the final assembly operations. Within the shop, brigades representing different sections manifested constant concern for meeting the tight assembly schedule.

Many designers and process engineers are also laboring with initiative. They are making an effort to reduce the amount of labor required to produce the machine units, and they are attempting to make their production easier. It was found during assembly of the combines that the reduction gear, which had a design that the brigades believed to be inadequately developed, was slowing down the work. Soon the engineers found another design for the unit, and they replaced the reduction gear by a series-produced motor vehicle gearbox, introducing a new power take-off unit into it. The labor expenditures decreased dramatically and the machine became more economical.

A large consignment of machines for Urengoy came into being through the collective efforts of the laborers and engineers, and through their creative cooperation. Here as in all other matters, the rayon CPSU committee and the city and oblast party committees offered us assistance. Laborers of the plant and the shops, including ours, completed their important pledge by as early as August, more than a month before the promised deadline. We shipped the last combines out in the middle of the month, completing our annual plan.

Now that our machines are en route to Tyumen Oblast, we need to think about the experience we acquired achieving our most important pledge. We can note that working friendship, a feeling of collectivism and the ability to organize a socialist competition underwent a good test of strength.

But the work at this forced pace showed that in working toward a set goal, we often still rely more on enthusiasm than on engineering, organizational and technical measures. Many weak sides were revealed in production organization, ones which require priority attention from all of the enterprise's services, so that nonproductive outlays of work and resources could be excluded in the future. Unfortunately, there were many such outlays.

Rhythmicity is the first problem we need to talk about. If all parts had been delivered for assembly regularly, we need not have conducted crash campaigns, and we could have done more without resorting to overtime, something which we could not do without for the moment.

There are weak sides in the system for delivering raw materials and intermediate products, coordinating the different production units and preparing the production lines, and they must be strengthened in every possible way. Work is being done in this direction. But as an inspection showed, the effort is still inadequate. We are often let down by our suppliers of rolled metal--metallurgists in Cherepovets. Moreover we ourselves are sometimes in no hurry to complete measures intended to improve production. As an example construction of the painting and finishing building has dragged on for a long time at the plant. Had this building been finished sooner, we could have transferred a significant number of the associated operations out of the assembly shop area.

As the producers see it, the planners of the new pipe cleaning and insulating combines should show more concern for reducing the weight of the machines. The metal content of the largest of them is, in our opinion, excessive, which is not at all in keeping with the objective of all-out economization of metal.

Plant specialists raised this important issue before specialists of the "Gazstroy Mashina" Special Design Office, which is located in our city. I would hope that the practical results would be soon in coming, so that equipment being produced for gas pipelines being built in the country would be typified by even better economic and operating characteristics.

Our plant is the country's sole supplier of gas and petroleum pipe cleaning and insulating machines. This makes our responsibility before the creators of the manmade gas and petroleum rivers even greater, and it requires the collective to make an even more significant contribution to solving the fuel and energy problem. And although our clients have no complaints about the plant's products, we have much to do to achieve the fullest possible use of the potentials of every productive unit for further improvement of all indicators. The high jubilee pledges and the experience acquired in the course of their satisfaction encourage the collective to do just this.

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## RELATED EQUIPMENT

### KIROVAKAN SUPPLIES INSTRUMENTS TO GAS PIPELINE AHEAD OF SCHEDULE

Yerevan KOMMUNIST in Russian 1 Oct 82 p 1

[Article by KOMMUNIST Special Correspondent N. Mesropyan: "For the Siberia-Uzhgorod Gas Pipeline"]

[Excerpts] The inscription on the wooden box read, in large letters: "FOR THE WEST SIBERIA-UZHGOROD GAS PIPELINE." Each day 10-15 such boxes are loaded for Kirovakan. It is known at the railroad station that these boxes contain cathode stations intended for the country's most important construction project, which is why they are shipped on priority, without the slightest delay.

"Make deliveries ahead of schedule"--this is the slogan of laborers of the Kirovakan "Avtomatika" Plant.

This is the second year the "Avtomatika" plant has been producing cathode line stations. They were designed by the All-Union Scientific Research Institute for Planning and Construction of Main Gas Pipelines with the active participation of Kirovakan instrument makers. Sergey Dilanyan, chief of Machine Assembly Shop No 211, distinguished himself especially. It was precisely owing to his proposals that a number of innovations were introduced into the design which made it possible to completely automate the station and improve its qualitative indicators. Now the "Avtomatika" plant is the country's sole enterprise producing stations providing fully automatic cathode protection. They are intended to protect pipelines from stray currents.

It was resolved at a workers' meeting that 3,600 cathode line stations would be manufactured and shipped to the route before the end of the year, instead of the planned 3,400. The shop collective is honorably working on its high socialist pledge, and it is ahead of the already-tight schedule. The best assemblers, Shaliko Kazaryan and Norik Ayvazyan, who systematically surpass the plan by 20-30 percent, are in the lead of the competition.

There is another assembly shop in this enterprise--No 209, which also fulfills orders for the gas pipeline under construction.

"When the sanctions of the U. S. administration became known," explained Gerbert Tovmasyan, the chief of the enterprise's production-dispatch department, "the collective of this shop assimilated mass production of two types of blocks for gas pumping stations in record time, literally in just a month."

The blocks produced by shop No 209 are intended to measure and control the operating conditions of the machine units contained in gas pumping stations. Within a short time the best assemblers--Karine Oganessian, Roza Gevorgyan, Arshak Marukyan and Al'bert Gyurzadyan--assimilated the most complex and critical production processes associated with assembly of the units, and now they have the privilege of attaching their personal brand to the units. The shop collective promised to complete 4,800 blocks of the two types before the end of the year--250 more than planned.

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## RELATED EQUIPMENT

### CHEBOKSARY T-330 TRACTORS SATISFY CONSTRUCTION NEEDS

Leningrad LENINGRADSKAYA PRAVDA in Russian 17 Sep 82 p 1

[Article by N. Osipov: "Cheboksary Tractor Builders"]

[Excerpts] Ten years have passed since an excavator dug the first bucket of earth from a vacant plot on the southeastern outskirts of Cheboksary, initiating construction of an enormous enterprise--the Cheboksary Industrial Tractor Plant. Now the ChZPT--this is the abbreviation by which the plant is referred to locally--is an operating enterprise.

Series production of T-330 tractors intended for bulldozers and their modification--the TT-330, intended for pipelayers--has been organized at the enterprise.

A. Skrebtsov, the plant's chief engineer, recalls how these giant tractors were created. Even to him, an experienced specialist who had devoted many years to Soviet tractor building (he had been chief engineer of the Volgograd Tractor Plant prior to this), the closely related Cheboksary tractor turned out to be a tough nut to crack:

"Creation of the T-330 forced us to simultaneously solve many complex problems," he explained. "We needed new brands of metals, rubbers and lubricants--the old ones would not last long enough under the high loads typical of heavy tractors. The design of the machine and the quality of the engine had to be raised to perfection, the procedures for producing numerous parts and units had to be worked out, and the reliability of these parts had to be raised. After all, the T-330 must toil both in Siberian frosts and in Central Asian heat."

A large number of the country's leading institutes came to the aid of the plant. New brands of steels, oils and rubbers capable of operating at high loads and in all temperature conditions were obtained. Simultaneously the plant was outfitted with the most sophisticated equipment--equipment which elicits the delight of many foreign experts visiting the ChZPT. Thus specialists of "Caterpillar Tractor" (USA) and "Kamatsu" (Japan) noted that in terms of technical level, the Cheboksary plant was superior to their enterprises.

A sophisticated production base is a guarantee of highly effective work. But only people able to handle this equipment can achieve high results. Young people make up the backbone of the plant collective, which totals 15,000 people. The average age of the workers is 35 years. I spoke with many producers and asked about their biographies. Born in a small village in the Chuvash ASSR, graduated from high school and a vocational-technical school, served in the army, got a job at the plant, and now studying in the night school department of the tekhnikum (or institute)--such is the typical portrait of a young worker at the plant.

"What does your collective have to say about Washington's change in policy?" I asked of the chief engineer, A. Skrebtsov.

"We can have but one reaction--increasing our own production. This year we will already produce twice more vehicles than we did last year. Now the plant is introducing new output capacities, and building new shops. At the beginning of the next five-year plan, when the ChZPT will attain its planned output capacity, it will become the world's largest supplier of heavy tractors.

"Incidentally, our pipelayer is already more convenient and easier to control than similar American machines," said the plant's chief engineer. "The sensation of noise and vibrations in the cab of the Cheboksary tractor is much lower than in a Caterpillar."

Hundreds of tractors born in Cheboksary are laboring today over the vast expanses of the Soviet Union. They are helping to extract oil and gas, coal and iron ore, to build plants and to lay pipelines. And a new machine, one that is a time and a half more powerful than today's, is being created in the enterprise's experimental shop. The first models have already been assembled. They are now undergoing testing. The Cheboksary plant is attaining new summits of technical progress.

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## GENERAL

### KATEK ADMINISTRATIVE PROBLEMS DESCRIBED

Moscow STROITEL'NAYA GAZETA in Russian 25 Aug 82 p 2

/Article by A. Prigodich, STROITEL'NAYA GAZETA correspondent, Irkutsk Oblast: "Out-of-Town Model"/

/Text/ In the Bratskgesstroy Special Administration preparations were being made for an important event. A group of specialists was getting ready to fly to the city of Sharypovo, which is in the area of the Kansk-Achinsk Fuel and Energy Complex in Krasnoyarsk Kray. Their task included the establishment of one more major subdivision of Bratskgesstroy, a construction administration (with the rights of a trust) called KATEKStroy. But no expressions of delight were heard on this occasion. On the contrary, melancholy ruled in the administration.

And it was, by the way, only a few years ago when subdivisions were established at the sites of the Boguchanskaya GES, also in Krasnoyarsk Kray, and the Neryungrinskaya GRES in Yakutia. There was fraternal pride: we are going beyond the limits of the bratsk-Ust'-Ilimsk Territorial Industrial Complex.

But what has happened? Why has pride been transformed into dissatisfaction?

The problem was that when the Bratskgesstroy came to KATEK from its industrial base, rail cars loaded with materials and other items were already going not just to the Boguchanskaya GES and the Neryungrinskaya GRES, but also to a good dozen other major construction sites beyond the limits of the actual territorial production complex. They were going thousands of kilometers in various directions. In particular, 947 cars loaded with freight were sent to the Far East during January-April of this year alone. A substantial amount of such production also went to Taymyr, Surgut and other places. The parts for large-panel construction of one residential building equipped for northern climatic conditions were even sent by a request of the Ministry of Power and Electrification to the Smolensk Atomic Power Plant! They were, incidentally, to meet up with reinforced concrete, which the chiefs sent from the south of the European part of the country to the Irkutsk sector of the Baykal Amur Mainline.

The Bratskgesstroy finally managed to free itself of the Smolensk Atomic Power Plant, And, in the future, it should be assumed that the expensive



reinforced concrete of Eastern Siberia will not be transported to the West from the Urals. And people? How should the surprisingly irrational utilization of skilled personnel, who are working at many of the national's construction sites today, be dealt with? For example, 158 people were sent on temporary duty to the Kursk Atomic Power Plant and 155 to the Southern Ukrainian Atomic Power Plant, etc. What this patching of personnel holes costs the state is not difficult to calculate.

In the first place, specialists who are sent to warm regions retain, on the basis of their permanent work place, a decent salary with a zonal coefficient of 1.4 and five northern 10-percent supplements. There is an even more serious reason for doubting whether these temporary duty stints are justified. Let us recall that there are considerable expenses involved in attracting manpower to Siberia; detachments are mainly filled with young people inexperienced in construction work. Subsequently these same people, who now have moved up the wage scale to the higher pay categories for more skilled workers, return on temporary duty to their home areas, retaining the right to receive average wages with the zonal coefficient and the northern supplements. There is no production necessity by which the Ministry of Power and Electrification can justify this kind of economic policy.

Maybe here, at the Bratsk-Ust'-Ilimsk Territorial Production Complex, there is nothing more to do? Hardly. Plans call for the introduction of capacities for the production of 9,900 tons of rosin per year at the Ust-Ilimsk Forestry Production Complex. The estimated cost for the construction and installation work at this priority complex amounts to 3,680,000 rubles and as of the first of May only 480,000 rubles has been assimilated. By the end of the year a unit for production of technical-grade wood chips with a capacity of 225,000 cubic meters should be introduced. And again the same picture emerges: with an estimated cost for construction and installation work at the start-up complex amounting to 3,860,000 rubles, only 630,000 rubles were realized. In general, both facilities are in danger of not being completed within the deadlines which have been established. The nearly finished start-up complex for the production of chlorine and caustic soda at the Bratsk Forest Industry Complex is not being accepted for operations because the local treatment facilities for the chlorine plant were not built in time. The opening of capacities at the Kapaevsk Forest Industry Enterprise, and at a number of other facilities, is also behind schedule.

The main reason for this situation is the lack of manpower at Bratskgesstroy. It is strange, of course, to hear something like this when you know that Ministry of Power and Electrification personnel are scattered throughout the entire country. And now the ministry has set itself the task of increasing the collective of the new KATEKstroy Administration to 1,300 by the end of the year. And KATEK, like many other construction projects, requires not just anybody, but highly skilled specialists. And there are not enough of these even at the building industry plants of Bratskgesstroy.

At the silica brick shop at the No 1 Reinforced Concrete and Concrete Products Plant at the Bratskzhelezobeton Combine, I saw in front of the autoclave

more spoiled than unspoiled raw materials, and I asked, G. Shmyrunaya, a master worker, what the problem was.

"This requires skilled work here," she answered, "and instead of five crane operators, we have only two, and we have to go to other work sites frequently to get help. However, the crane operators, who replace one another in quick succession, do not succeed in learning to use the raw material carefully on the adjustable trays.

Other plants in the Bratskzhelezbeton Combine have quite a few similar difficulties, although in general it continues to provide quite a powerful industrial base for Bratskgesstroy. For the next year output worth 76 million rubles will be produced here. The problem is that more than 80 percent of this output will be produced in Bratsk itself and less than 20 percent will be produced in all the other regions taken together.

In other words, the two production lines are moving in different directions: the industrial base is concentrated in one place, and the construction-installation subdivisions have gone further and further away from the Ust'-Ilimsk Territorial Industrial Complex. Today this leads to significant losses due to the shipping of parts, materials and other items.

Many hundreds of cubic meters of reinforced concrete have been lost on the highway between Bratsk and Ust'-Ilimsk. But the plans do not call for the establishment in Ust'-Ilimsk of their own industrial base for residential building. There have been delays in starting construction of a large panel housing construction plant and a plant for the production of reinforced concrete items, in Kodinsk at the Boguchanskaya GES. Bratskgesstroy decided to limit itself to a minimal industrial base which is like an army engineering corps settlement in Neryungri. There is still no clear idea of what kind of construction industry enterprises should appear in KATEK, in the Far East East, where the recently organized Komsomol'sk Energostroy Trust belongs to Bratskgesstroy.

And so the Ministry of Power and Electrification is counting, as before, on the industrial base at Bratsk, and on shipments that take place over thousands of kilometers. Is this correct? Although the question is obviously rhetorical, it is nonetheless not a simple one because it is organically linked to another: what should Bratskgesstroy be like in the future?

"With its status as a special administration, the head apparatus of Bratskgesstroy is obligated to carry out operational leadership of all its subdivisions, without exception, including those located in the Far East at incredible distances," says A. Zakopyrin, head of Bratskgesstroy. "This is an unrealistic task, but we must carry the responsibility for its fulfillment. In general our opinion is that given the lack of change in its existing status, the activities of the special administration must be limited to the facilities located in Irkutsk Oblast and Krasnoyars' Kray. Or, in the opposite case, Bratskgesstroy must be given the status of an all-union association. Then its chief apparatus could work more on the future, while the operational leadership of the subdivisions could be fulfilled by its local headquarters."

I happened to hear identical judgments expressed by each of a large number of leading specialists at Bratskgesstroy with whom I discussed the subject of this article. And, while one cannot judge the situation with regard to the others, the Bratskgesstroy fully deserves the status of an all-union association. Nonetheless, Bratskgesstroy is called only a special administration.

It is clear that there are hidden here some departmental interests of the Ministry of Power and Electrification. If that is so, they are not in line with territorial interests, especially those of the Bratsk-Ust'-Ilimsk Territorial Production Complex. And, it would seem, they are not in line with state-wide interests, because the special conditions for financing and paying labor at the important industrial facilities of Siberia and the Far East must not serve to cover up administrative inadequacies in other regions of the country.

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GENERAL

'IZVESTIYA' ECONOMIC OBSERVER REPORTS FROM NEW URENGOY

Moscow IZVESTIYA in Russian 6 Sep 82 p 2

[Article by V. Romanyuk, IZVESTIYA economic observer, New Urengoy and Moscow:  
"Flowers from New Urengoy"]

[Text] The CPSU Central Committee and the USSR Council of Ministers approved an initiative by the labor collectives of a number of ministries to put into operation on time the main Urengoy--Pomary--Uzhgorod gas pipeline, despite the discriminatory actions undertaken by the U.S. administration. A weighty contribution to the provision of gas deliveries, including those for export, is being made by the gas workers of New Urengoy, a city which is growing like the legendary bogatyr of Russian folklore, in the polar tundra.

Grey sand and whitish reindeer moss on the shores--swept by the Arctic wind--of the Yevoyakha and the Sedoyakha, the rather squat barracks and masses of small mobile homes--that is how New Urengoy looked from the window of an Mi-8 helicopter a year ago, when we flew over the site of the deposits along the dotted line of the near-by gas collection installations. In that year much has changed in the face of the city, its silhouette is different; the signs of its maturity are becoming more and more visible.

We are standing with V. Dumanskiy, the chief engineer of the Lenurgengoystroy Trust, on the roof of a nine-story building, in the very center of the building site for the new microregion. Below us, finishers are hurrying about on the floors, bringing into the building the last blocks of foam concrete which will be used in heating the structure. In front of us sparkles the edge of the Sedoyakha River; the buildings on Leningrad Street will soon reach to the very banks of the river; beyond it there appear new blocks of residential buildings, which become lost in the blue haze.

Before coming to New Urengoy, V. Dumanskiy worked as the chief builder for Leningrad DSK-3 [House Building Combine]; he put up buildings in the Shuvalovo-Ozerki, Southwestern and Rzhëva-Porokhovaha Regions. He came to New Urengoy with the first detachment. Victor Antonovich recalls that no one believed that they would be able to open the first building in just

one year. But the Leningraders kept their word although in the course of the work they had to form brigades and resolve problems related to the delivery of panels for the buildings.

The collective which was entrusted with this responsible work thousands of kilometers from Leningrad is young. The head of the trust, A. Domanik, is 42, the chief engineer, V. Dumanskiy, is 35, and one of best brigade leaders A. Koryakin, is 33. Anatoliy Koryakin, and his wife Alvetina, who is an engineering estimator in this sector, have traveled a great deal to the various construction sites.

The Leningraders jealously follow the successes of the Moscow builders at the Siberian construction sites. "After all, said A. Koryakin, citing his own reasons, "the Muscovites in Nizhnevartovsk and in Tynda had a railway immediately, and we had to begin in Severobaykal'sk and New Urengoy without any rails. And the climatic conditions are more difficult: the winds and the frosts are very tiring."

It is difficult to overestimate the labor heroism of the Leningrad builders, who have this vital trust in a literally empty place, thousands of kilometers from their production bases. Ten or more trans-shipments are necessary to deliver the panels, which are manufactured at the Leningrad DSK-3; these panels are sent by a complex transport route to New Urengoy from Tobol'sk in the South and Labytnangi in the West. And already the first building is beginning to go up on the second side of the street, and one can envision the wide street which will be laid here, a prospect 120 meters wide. The Leningraders took upon themselves to open up 70,000 square meters of living space this year; this is 20,000 more than called for by the plan. In order to speed up the rate of work, they ordered from Leningrad four more tower cranes.

The local builders still have to master the Leningrad work methods, and not only in the organization of installation. The Leningrad home builders supply maximally standardized parts; residential buildings in the Leningrad series contain a total of 35 designated parts, while the Nadym builders supply 270, which is 8-fold more.

Thanks to the Leningraders, the city is pushing out its boundaries at a rate which is most heroic, especially if one takes into account the severe Arctic conditions and the difficult transportation network. In 1979 a total of 13,000 square meters of living space were opened here, and in the very next year 68,000, and then 106,000. The plan calls for the introduction of 142,000, while the obligations undertaken by the city stipulated 200,000 square meters! A schedule has been developed for the complete finishing and landscaping of the city.

At the gorispolkom they reported to me that the city is growing at such a rate that in the last year and a half the population has doubled. Further, the problem of accomodating new arrivals is not so acute. One of the latest gorispolkom decisions was to stop the growth in the mobile-home area.

Entry into the temporary barracks has been forbidden, and one of them is being prepared for demolition. A year ago the temporary shelters constituted the basic housing stock of New Urengoy. Today the situation has changed sharply. Well-constructed buildings made of wood or panels comprise a solid housing fund of 240,000 square meters of living space. The parts for eight-story buildings which will house dormitories have started to arrive from Surgut.

For a long time the Torch Club was the only cultural center in the city. With the opening of an athletic-sports complex, a social center, the "Rovesnik" movie theater, a large number of sports groups have started up, and a choir and ball room dancing school have started to hold sessions, too. Much has already been said about the infrequency of visits made to the North by famous entertainment collectives, and the tour routes of popular artists take them only to the major, built-up cities of Siberia. By rights they are much more needed here, in the polar cities.

A. Dybrin, the chairman of the gorispolkom has just flown in from Leningrad, where he received assurances from the Leningrad Soviet and Glavleningradstroy /Main Administration for the Housing, Civil Engineering and Industrial Construction of the Leningrad Gorispolkom/ that the rate of construction in New Urengoy will be stepped up, and the building series will be improved. There is agreement, too, on the building of a children's combine in brick with places for 280 children; the combine is not part of the Leningrad builders' program. Alim Grigor'yevich looks to the future with optimism. In the first place, the arrival of the railway in Urengoy will mean the end of seasonality in the delivery of freight; the panels will come from the city on the Neva without multiple trans-shipments. In the second place, enormous work on the engineering networks has been completed. A year ago the site was torn up with trenches, and today questions are being raised about the power and heat supply to the new buildings. The water supply system is fully operational, a powerful boiler house has been built, commercial premises for stores have doubled, a bread plant turns out 20 tons of bread a day, and a milk plant has just been accepted for operation. Today the city's silhouette is determined by schools, department stores and a children's combine called "Little Flower of Urengoy," as well as a many other attractive buildings finished in the modern architectural style.

Subsidiary farming for the city is being organized. Under construction are greenhouses extending over 6,000 square meters, a pig sty for 1,500 pigs, a hen house for 16,000 laying hens. Operating on the basis of comprehensive gas preparation, the greenhouses provide green onions, cucumbers and tomatoes, while the pig sties which have been built here provide meat for public consumption.

The international brigade of Stanislav Leshchuk has been doing excellent work in the construction of the city. "I've had good luck with the fellows," says the brigade leader. "We've got a good crew, reliable, good-hearted." Seventy members of the brigade and seventy lives. S. Leshchuk himself is from the Ukraine, a Dnepropetrovsk man. The brigade includes others from

the Ukraine: V. Vakhnenko, V. Krivenko, and A. Fedyanov; R. Gerasim is from Belorussia and P. Georgiu is from Moldavia. Sultan Agaygil'diyev is from the Northern Caucasus and N. Garifullin is from Tadzhikistan.

One of the best brigades is headed by P. Baryayev, who is a deputy to the USSR Supreme Soviet. The brigade has worked for four years with almost exactly the same members. The collective includes people who have come from many republics: there are Russians, Ukrainians, Estonians, Tatars, Bashkirs and Mordvinians.

And there is another reminder of the international friendship of peoples in our country. On the street named after the magazine SMENA a large building with a bright facade stands out: it is the library for children and young people. SMENA conducted a nation-wide campaign to collect books for this library. And now several tables are heaped with volumes from newly-arrived packages that originated in the Ukraine and major Siberian cities, in Bashkiria and Moscow. The librarian, M. Balan, who is a very young girl, told us that the library already has more than 40,000 volumes and about 3,000 young patrons.

A multitude of urgent matters fill the work day of the gorispolkom chairman. We met at eight in the morning, an hour before the start of the working day. But even at this early hour there was an almost uninterrupted stream of telephone calls.

Alim Grigor'yevich Dybrin came to work in the soviet after previous employment in the economic sector. In the course of his work he has had to learn about a new set of issues; he has had to help the economic specialists avoid a narrow, departmental approach when it comes to city interests. But sometimes his joy at all the new openings and starts is mixed with bitterness, when he comes up against callousness, or a reluctance to put aside narrow, departmental interests.

Facilities in the social, cultural and service spheres determine to a great extent the appearance of the city. But at present not everything that has been built in New Urengoy is pleasing to the eyes; instead, some buildings remind one of temporary structures, which indeed they are in essence. But would it not be better to start with major constructions, with well thought out planning and architectural decisions? The Leningrad builders did not take upon themselves the job of comprehensive development, and no such task was put before them. It would seem that the central regions of the country could help with the development of this young polar city, especially in establishing preschool institutions, sports complexes and entertainment buildings.

At the first stage, when the original field engineering settlement was being established, the decision was made to go with wooden buildings, panelboard and block construction. These squat buildings, scattered capriciously along the bank of the Yevo yakha, look extremely unimposing, creating the impression of a quickly thrown together shelter. Kremchung and Ural tractor trailers rumble through the city unimpeded and frequently

without any particular need. There have been delays in the establishment of a base for the construction industry of New Urengoy. We had a conversation about this a year ago, but even now no start has been made on construction of a plant to produce reinforced concrete parts, or a concrete solution unit.

The 26th party congress defined clearly the demands which the economic managers must meet: no production success can cover up for inadequacies in provisions for people: no reports on successes in production should be accepted if they are not coordinated with the resolution of problems related to the social and service arrangements for the working people. In exactly the same way the comprehensive development of New Urengoy must not lag behind the development of the Urengoy deposits; it must not be slower than the rate of growth in production of the blue fuel.

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## GENERAL

### HOUSING FOR PIPELINE BUILDERS DESCRIBED

Moscow SOVETSKAYA KUL'TURA in Russian 7 Sep 82 p 1

[Article by A. Gil'ts; Perm Oblast; "Along the Mainline"]

[Text] Today collectives of many enterprises and institutions in Perm Oblast are participating actively in the fulfillment of responsible assignments related to the construction of the Urengoy--Uzhgorod pipeline. For example, here is what M. Zhuravlev, chief planning engineer of the Uralgiprolesdrevprom Institute [Ural State Institute for the Planning of Establishments of the Lumber, Woodworking, Wood-Chemistry and Paper Industry], says: "Our institute is engaged in planning residential settlements at the compressor stations of three pipelines: the Urengoy--Uzhgorod, the Urengoy--Tsentr and the Yamburg--Yelets lines. These are the Tayezhnyy, Bobrovskiy and Oktyabr'skiy settlements. They are all located in Tyumen Oblast.

The settlements which are being planned include well-equipped buildings, kindergartens with places for 100-140 children, schools with places for 400 pupils, stores and cafeterias. Residents will be provided with long-distance telephone communications and television. Roads covered in concrete and treatment installations answer the latest needs in environmental protection. By the way, the forest remains untouched even in the settlements themselves.

It seems that the new arrivals will be satisfied. The institute has worked out standard designs for buildings, which will now have triple glazing, which extends to the verandas. The buildings are designed to withstand severe frosts--down to minus 50 degrees. The Perm Home Building Combine should participate in the building of the settlements.

Cultural workers from the Kama area are also making their significant contribution to the general cause. The collectives of amateur artistic groups in those regions of the oblast through which the gas pipeline runs have set themselves the goal of making the daily life and recreation of the builders as valuable as possible.

A library has already been collected for the builders of the gas compressor station in Gornozavodskiy Rayon. The residential settlement has a modern

movie projector, and every other day feature films and documentaries are shown in the dining hall. A showing of films devoted to the 60th anniversary of the formation of the USSR has been organized.

The teachers and pupils of the Gornozavodsk children's music school have made the builders familiar with the lives and works of many outstanding performers and composers. The artistic collective of the House of Culture at the cement plant also performs regularly before the builders. They recently had as guests the children's wind orchestra, winner of the Perm Obkom Komsomol prize.

The city bookstore organizes regular visits to the builders' settlement for on-site sales of fictional, as well as political and technical works. There is also a Soyuzpechat' kiosk. The propaganda brigade of the Cement Worker House of Culture" appears before the builders.

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## GENERAL

### EXPERIMENTAL BOILER PLANT DESCRIBED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 13 Aug 82 p 1

/Article by A. Alekseyev, SOTSIALISTICHESKAYA INDUSTRIYA correspondent, Elektrostal: "Heat Factories on the Conveyor Belt"7

/Text "What does it mean to install a boiler," says V. Semanyev, director of the combine. "First of all you have to join together with ducts two spaces--the upper and the lower. And for this you have to clean off on the order of 1,500 ends and the same number of inlets. In addition it is essential to line the unit with thermal insulation, cover it with a steel shell and, finally, paint it. And if all this work is done on-site, it takes two months of handle. In the shop the same operations take only three or four days.

In the first place we are not dependent on the weather conditions. In the second place we have everything we need for every operation: stationary compressor stations, cleaning equipment, a special unit for assembling and testing... The specialization of the installers is also important. There you have speed and high quality.

The experimental boiler-building combine, as this Elektrostal enterprise is now called, had its origins in the Mosoblteplomontazh Trust. Its birth was by no means accidental. In the Moscow area alone, it is necessary to put into operation every year about 200 boilers, big and small, in cities, housing projects, sovkhoses and recreation centers. The most diverse construction and installation organizations have been forced to take upon themselves at time the extremely difficult task of building, adjusting and starting up boilers. In addition, there are more than 200 (!) organizations which supply parts or services necessary for a complete boiler installation. How can people stay on top of the situation in case of missing deliveries?

On the other hand, a boiler is a relatively complicated technical complex. There is good reason why the Gosgortekhnadzor /State Committee of the Council of Ministers for Supervision of Industrial Safety and for Mining Inspection7 organs are so fussy about the quality of installation. And this means that before the cherished flame is lit in the fire box, the installers will be dripping with sweat. And for this reason, the customers were incredulous

when the combine specialists announced that they would install a major boiler system in Ruza in a period of two weeks. After all, the very minimum required according to the strict norms for this work is a period of a year and a half. But the system was ready for operation in exactly the specified time.

They did not, as usual, begin by bringing in equipment and material to the installation site. Instead, large capacity trailers arrived with prepared units at the building where the boiler system was to be installed. A powerful crane truck, capable of lifting 25 tons of freight in one swing, also arrived at the site in time. The installers were equipped with hoists and jacks, which they used to maneuver carefully all the units into the building, following guides built into the foundation. All that remained to be done was to join up all the conduits, establish the control and measuring equipment... "Where's the person who ordered this? Take the key!"

True, this is only the consummation of enormous work--unseen at the installation site--by the combine's collective.

Every unit of the boiler had been assembled and tested in the shops before hand. The insulation workers had wrapped it in thermal insulation; the installers had put the steel "shirt" on the top. Other units were prepared in the same parallel fashion: the station for chemical water treatment, the pump systems unit, the unit for the control and measuring devices and the automated equipment.

This unique conveyor is the basic operating principle of the combine: the parts, units and systems come together like little streams flowing into a river. By no means should one think that all efforts are concentrated just on the preparation of units for one boiler system at a time. The "hulls" of several different kinds of "ships" are being put together in the "building slips" at one time.

The combine is called experimental for good reason. There is, after all, nothing similar in our country, and there was nowhere to send its specialists for study. As the director himself claims; "We were operating by trial and error."

And in reality, this combine now reminds one of a well-oiled and adjusted mechanism. But how much intelligence, diligence, inventiveness and courage were necessary to finally put the production of boiler units onto a production line? The least bulky arrangement of the units had to be devised in order to make it possible for them to be transported on trailers and unloaded by a crane truck. And all the units had to go together easily and quickly.

Nothing new is done easily. There are many reasons and factors for this. Sometimes this and the fear of new things or a persistent habit of doing things the old way, which is, people say, more reliable and more accurate. What kind of person, then, had the necessary enthusiasm to be director of the

management, to be part of the party organs, to be a member of the directorate of the combine and overcome administrative obstacles, departmental barriers, and technical problems. For the sake of this goal--a plant which produces boilers--it was worth sweating over. This is, after all, real scientific and technical progress, the real embodiment of the tasks set by the 26th party congress.

Today the combine is taking only the first steps. Its production program is about 20 boilers a year. But its structure is already clearly outlined. An experimental plant for installation parts is employed in assembling units. Two specialized construction and installation administrations are installing units for customers. There is also a specialized start-up and adjustment installation administration which is responsible for setting up monitoring and measuring devices and for putting the boiler into operation. The combine has taken upon itself to construct the buildings for the boiler systems. This has been entrusted to a mobile mechanized unit.

After the renovation of the plant is completed, the combine must reach out for another cherished goal of 60 boilers per year, which will be handed over to the customer complete with key.

The task is large and complex. The realization of this kind of program requires a great deal of strength. And it is for this reason that the combine is now concerned with the main problem, how to standardize the boilers. Every customer has essentially his own individual plant. Is this possible with a production line method? Of course, not. The combine has worked out standard technical specifications. Proceeding from these figures, the customer can choose without any harm to his project a plan for a fully-assembled boiler with a production of 3 to 60 kilocalories per hour.

Testing of the units is another important task which is on the agenda. It is well known that it is much easier to eliminate any defect here at the plant than at the installation site. But for now only individual units can be tested. It will be possible to give the assembled boiler a test run in the new shop with the name MK Installation and Testing Unit.

But, what do the economists say about the new method?

"Unit installation not only significantly reduces the time required for building thermal facilities," says V. Semanyev, "but it also significantly reduces expenses. Judge for yourselves. Previously the estimated cost of construction and installation work amounted to more than 52,000 rubles; it is about 36,000 for us to produce the same type of boiler. The labor costs are lower, metal and other materials are saved. In general, the cost of a boiler has been reduced from 86,000 to 66,000 rubles."

The experimental boiler-construction combine can be considered not only an experimental testing site for the unit method, but also a unique school of advanced experience. There is no doubt that worthy students will be found to spread this experience throughout the country.

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